

# REVISION OF THE GENERA *EUCHROMIUS* GUENÉE AND *MIYAKEA* MARUMO (LEPIDOPTERA: CRAMBIDAE: CRAMBINAE)

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The Palaearctic, Nearctic, Neotropical, Oriental and Australian species of the genus *Euchromius* Guenée, 1845 are revised. *Euchromius* is a senior synonym of *Pseudoancylolomia* Ahmad, Zaidi & Kamaluddin, 1982. Four new species are described: *E. circulus* (Burma), *E. confusus* (Afghanistan, Iran, Tadzhikistan), *E. minutus* (Brazil) and *E. ornatus* (India). The following synonymies are established: *E. pulverosus* (Christoph, 1887) is a senior synonym of *E. cochlearellus* (Amsel, 1949). *Pseudoancylolomia qadrii* Ahmad, Zaidi & Kamaluddin, 1982 is a junior synonym of *E. ocellus* (Haworth, 1811). *E. viettei* Bleszynski, 1961 is a senior synonym of *E. karsholti* Ganey, 1987. The genus *Miyakea* Marumo, 1933 is revised, *M. sinevi* sp. n. (Mongolia) is described and *M. raddeellus* (Caradja, 1910) is reinstated as a valid species. *E. lushanensis* Inoue, 1989 is transferred to *Miyakea*. *E. delicatalis* (Hampson, 1919) is transferred to the genus *Aurotalis* Bleszynski, 1970. A key is provided together with full (re)descriptions of all species, with notes on distribution and biology.

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The classification of the Pyralidae has been subjected to several changes during the last two decades. In the present paper the genera *Euchromius* Guenée, 1845 and *Miyakea* Marumo, 1933 are treated as belonging to the subfamily Crambinae of the Crambidae, regarding all 'pyralids' at superfamily level as proposed by Minet (1982, 1991) and confirmed by Solis & Mitter (1992).

The taxonomic position of *Euchromius* and *Miyakea* has never been the subject of much discussion. These taxa have always been placed in the Crambinae. Zeller (1863) subdivided the Crambinae as 'Crambos' and 'Chilones'. Bleszynski (1965) treated *Euchromius* and *Miyakea* close to *Metaeuchromius* Bleszynski, 1960, *Pseudargyria* Okano, 1962 and *Eschata* Walker, 1856. Gaskin (1975) redefined the tribus Crambini and erected the subtribus Crambina and Corynophorina with *Euchromius* included in the subtribus Crambina. Most of these subdivisions within the Crambinae are, however, ill-defined and still little understood.

This paper provides the revision of all species of the genera *Euchromius* and *Miyakea* are easily recognized within the Crambinae by their yellow medial fascia and the terminal black dots on the forewing. *Euchromius* has a worldwide distribution with the ex-

ception of Indonesia, the Philippines and the islands in the Pacific, while *Miyakea* is restricted to the eastern Palaearctic. Most species of *Miyakea* are known from a few specimens and a few localities only, probably since very few collectors have visited China and surrounding countries.

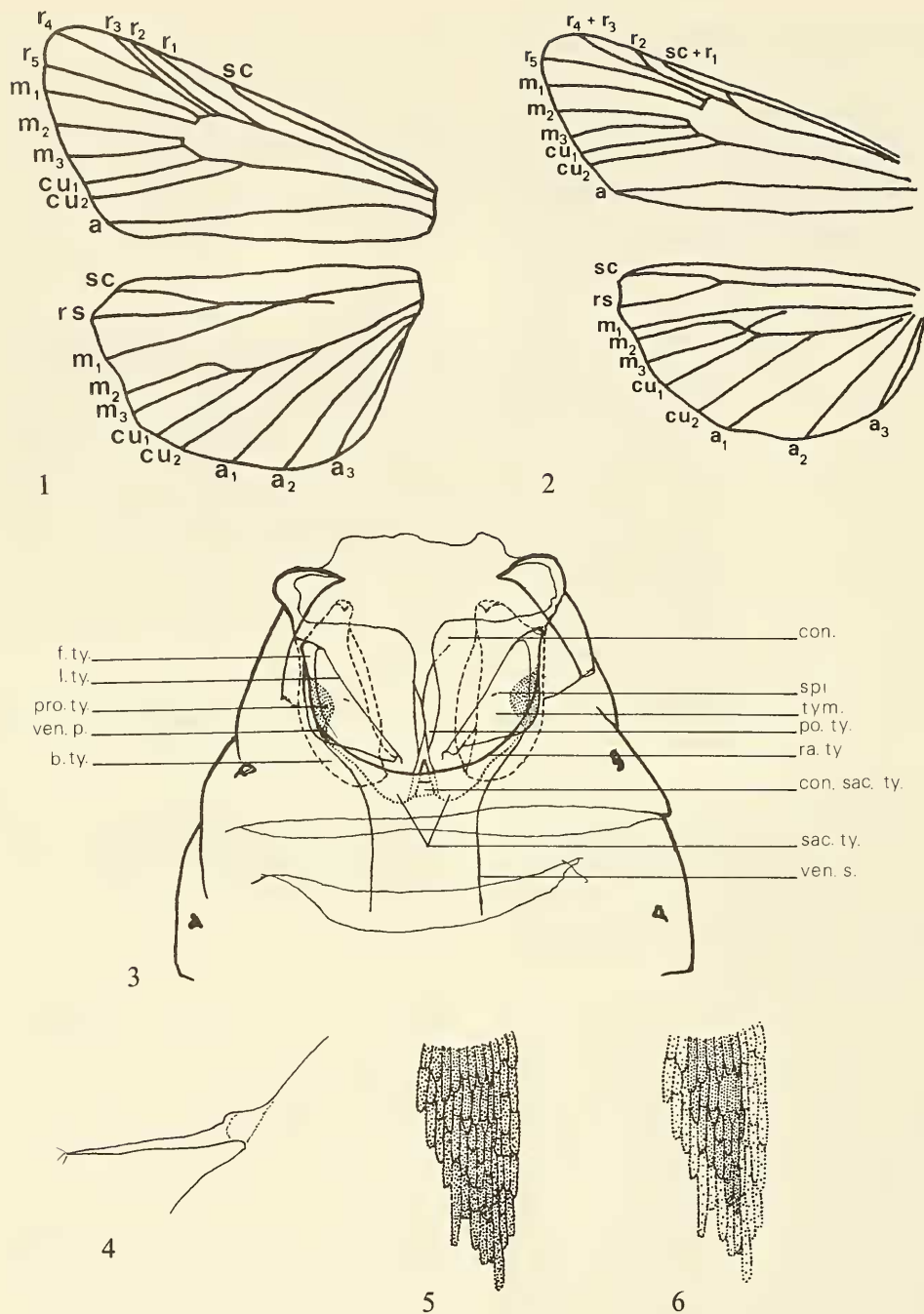
*Euchromius* and *Miyakea* are very similar in external characters. As a consequence, several species of *Miyakea* have been included erroneously in *Euchromius*. In this paper a new set of distinguishing characters is given.

For more information on the taxonomic history, distribution and biology of the genera I refer to the generic description.

## MATERIAL AND METHODS

In the species descriptions the statement, 'labial palp two' stands for: the length of the labial palp is twice the diameter of the eye. The formula for the black terminal dots mentioned in the species descriptions is read as follows; 2-2-3-2 stands for: the black terminal dots closest to the apex start with a group of two, followed by a second group of two dots, a group of three dots and finally a group of two dots near the tornus (fig. 7).

Holotypes and lectotypes are referred to in both



Figs. 1-6. Morphological characters. - 1, venation in *Eucharis*; 2, venation in *Aurotalis delicatalis*; 3, tympanal organs in *Eucharis*. Abbreviations, b. ty. = bulla tympani; con. = conjunctivum; con. sac. ty. = conjunctivum saccus tympani; f. ty. = fornix tympani; l. ty. = ligna tympani; po. ty. = pons tympani; pro. ty. = processus tympani; ra. ty. = ramus tympani; sac. ty. = saccus tympani; spi. = spinula; tym. = tympanum; ven. p. = venula prima; ven. s. = venula secunda; 4, spinula in *Eucharis*; 5, tegula, evenly mottled, no dark patch; 6, tegula with dark patch in the middle.



the synonymy list and the paragraph 'material'. The spelling of the localities is taken literally from the labels to make tracing of the material easier. For Chinese material the Pinyin transcription is given.

Distribution maps are based on personally examined material only, except for *E. ocellus*, where the North-European localities are mostly based on reliable literature references.

The sequence of the species followed here is based on overall similarity. No phylogenetic conclusions should be drawn from this sequence. The species of *Euchromius* which were revised and (re)described recently (Schouten 1988, 1990) are only briefly treated, but when available, new information has been added.

### Dissections

Dissections and mounting of the genitalia, abdomina and tympanal organs were carried out in the way described by Robinson (1976) with some adjustments. The abdomen is completely separated from the thorax, taking care not to disrupt the tympanal organs. Then, the abdomen is macerated for three minutes in a KOH 10% solution at 100° Celsius and transferred to ethanol 70% for cleaning. Snipe feathers are used to descale the abdomen and micro-pins mounted into a match are used to remove remaining rissue. Genitalia are separated from the abdomen by cutting the posterior membrane of tergite and sternite VIII. The aedeagus of the male genitalia is separated from the anellus and treated separately. After staining with Chlorazol Black 1% (diluted in 70% ethanol), abdomen and genitalia are fixated in 96% ethanol. Male genitalia are fixated with the valvae spread. Abdomen and genitalia are preserved in Euparal together on one slide, but under separate cover-slips. The abdomen is placed under an elevated cover-slip to avoid accidental flattening of the tympanal organs. Since the Euparal essence will slowly evaporate, a vacuum underneath the coverslip may occur and air-bubbles can arise, which can be avoided by putting the slide in a stove at 40 °C for three days. The edges of the coverslip are then sealed off with transparent nail-polish.

Distortions caused by manipulations during the preparation of the genitalia or by pressure of the coverslip may easily arise. The coverslip can change the orientation of the genitalia to a great extent. The angle in which the valvae, aedeagus or any other part of the genitalia, are bent upward or sideward can be far outside the usual range of variation of the species under consideration. Ignoring these artifacts easily leads to incorrect interpretations, which may be exemplified by the synonyms *E. siuxellus* Ganey & Hacker, 1986 and *E. gartheellus* Derra, 1985 being a result of a too narrow interpretation of differences observed in genital slides (see Hacker 1986, Derra

1987). Moreover, the differences observed are for some part caused by distortions.

### Depositories

Abbreviations (codens) for depositories follow Arnett & Samuelson (1986), with the addition of: DERR (collection G. Derra, Bamberg, Germany); GIEL (collection C. Gielis, Lexmond, The Netherlands); GORD (collection A. D. Gordon Agriculture and Nature Study Institute, Degangya A, Israel); HUIS (collection K. J. Huisman, Wezep, The Netherlands); HULL (collection E. Hull, Helsby, Great Britain); INOU (collection H. Inoue, Tokyo, Japan); LAND (collection B. Landry, Ottawa, Canada); LUCA (collection J. A. W. Lucas, Rotterdam, The Netherlands); MAES (collection K. Maes, Gent, Belgium); PRIN (collection W. de Prins, Berchem/Antwerpen, Belgium); ROBI (collection R. Robineau, Tremblay-les-Gonnesse, France); RTAS (author's collection); WOLF (collection H. W. van der Wolf, Nuenen, The Netherlands).

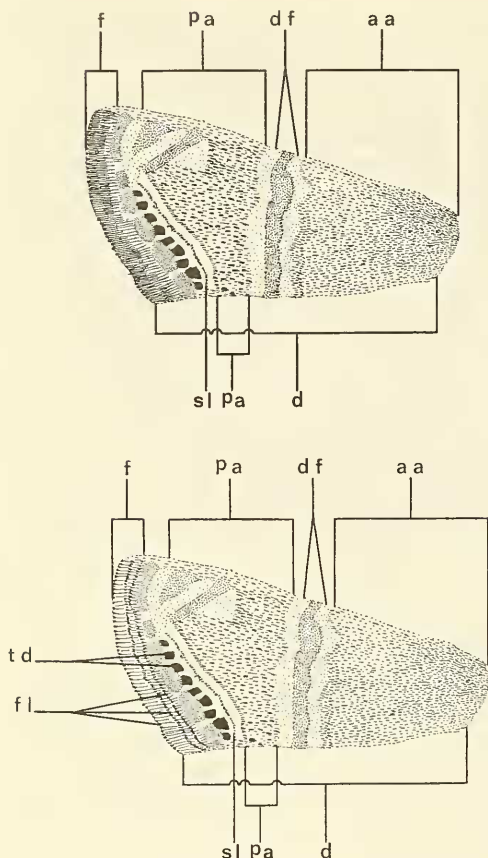
### SYSTEMATIC PART

#### *Euchromius* Guenée, 1845

- Euchromius* Guenée, 1845: 324. Type species: *Tinea bella* Hübner, 1796: 29, designated by Desmarest (1857: 255).  
*Eromene* Hübner, [1825]: 366. Type species: *Tinea bella* Hübner, 1796: 29, by monotypy [nomen praecoccupatum: *Eromene* Hübner, [1821]: 256., Noctuidae].  
*Araxes* Stephens, 1834: 315, sensu Bleszynski (1963: 106), (nec *Araxes* Walker, 1863). Type species sensu Bleszynski (1963): *Palparia ocella* Haworth, 1811: 486 [junior invalid designation].  
*Ommatopteryx* Kirby, 1897: 274. Unnecessary replacement for *Euchromius* Guenée, 1845 [mistaken homonymy with *Euchromia* Hübner, 1819 and *Euchromia* Stephens, 1829].  
*Pseudoancylolomia* Ahmad, Zaidi & Kamaluddin, 1982: 14. Type species: *Pseudoancylolomia qadrii* Ahmad, Zaidi & Kamaluddin, (1982: 15), by monotypy. Syn. n.

The taxonomic history at genus level has been thoroughly explained by Bleszynski (1961, 1963) and will not be repeated here. Ahmad, Zaidi & Kamaluddin (1982) erected the new monotypic genus *Pseudoancylolomia* for the new species *qadrii*. *Pseudoancylolomia qadrii*, however, is a junior synonym of *Euchromius ocellus* (Haworth, 1811) as is pointed out under that species.

*Pseudoancylolomia* can be distinguished from other Crambinae genera (Ahmad et al. 1982) by the well developed proboscis and the anteriorly projecting frons. These characters are, however, represented in all species of *Euchromius* as well. Vein R5, mentioned as stalked with the partly fused R3-R4, is identical to that of all members of the genus *Euchromius* (see Ahmad et al 1982: 17, fig. 2). Therefore, *Pseudoancylolomia* Ahmad, Zaidi & Kamaluddin,



Figs. 7-8. Forewings. - 7, fringes whitish at base, then evenly coloured; 8, forewing, fringes with three dark lines. Abbreviations, f = fringes; pa = posterior area; df = double fascia; aa = anterior area; td = terminal dots; sl = subterminal line; d = dorsal edge; fl = fringes lines.

1982 is a junior synonym of *Euchromius* Guenée, 1845.

The firstly described species of the current genus *Euchromius* is *Tinea bella* Hübner, 1796. Subsequently, Haworth (1811) described the second species now in *Euchromius*: *Palparia ocella*. Costa (1829), Treitschke (1832), Robinson (1870) and Turati (1924) described species, later to be synonymized with *ocelleus*. Until 1900 Zeller was the main author dealing with species now attributed to *Euchromius*. He described *anapiellus* (Zeller, 1847), *vinculellus* (Zeller, 1847), *zonellus* (Zeller, 1847) [= *ramburiellus* (Duponchel, 1836)], *superbellus* (Zeller, 1849), *wockeella* (Zeller, 1863) [= *superbellus* (Zeller, 1849)] and *cambridgei* (Zeller, 1867). After 1900 mainly three authors were dealing with *Euchromius*

species. Caradja described four species in the period 1910-1937. Amsel described eight species in the period 1949-1961, of which five are now regarded as junior synonyms. Bleszynski in 1960-1967 made a serious effort to revise *Euchromius*, resulting in the discovery of many synonyms and the description of 13 new species, of which only one turned later to have a older synonym.

The Palaearctic species of *Euchromius* were revised by Bleszynski (1965a), the Neotropical and South-Nearctic ones (in part) by Capps (1966). Study of material in museum collections not seen by previous authors and material collected after the publication of the above mentioned articles, has revealed many new data. Study of material seen by Bleszynski and other authors lead me several times to conclusions conflicting with theirs. These conclusions and the new data resulted in the updated revision of the genus *Euchromius* presented in this paper.

The Oriental species are here revised for the first time. The species from the Afrotropical and Australian region were revised by Schouten (1988, 1990), but are included in the key. The present revision deals with 47 species, four of which are new to science. The females of *nivalis* (Caradja, 1937) and *malekalis* (Amsel, 1961) are described for the first time. Of two species the female and of three the male is unknown. Additional new species can be expected, especially from Africa, China and the Oriental region since large areas in these regions have never been visited by collectors of Lepidoptera.

### Diagnosis

Dorsal insertion of ductus ejaculatorius is subterminal; gnathos is, in principle, armed with dorsal thorns; tergite VIII of males with sclerotized pattern; frons always projecting forward; M1 of hindwing located in the upper angle of the open cell; base of M2 and M3 of hindwing without basal pointing stalk (fig. 1); spinula present (except in *nivalis*), simple hair-like, without distinctly swollen base (fig. 4).

### Morphology

The morphology is only discussed for features not treated by Schouten (1988).

### Intraspecific variation

The species of *Euchromius* show little intraspecific variation. Only *cambridgei* (Zeller, 1867), *gratiosellus* (Caradja, 1910), *ramburiellus* (Duponchel, 1836), *superbellus* (Zeller, 1849) and *vinculellus* (Zeller, 1847) vary substantially in colouration. Variation in structure of the genitalia is limited as well; some variation is known in *tanalis* Schouten, 1988 and *vinculellus*.



Fig. 9. Forewings in *Euchromius* and *Miyakea*. Upper row from left to right: *E. matador*, *E. raddeellus*, *M. raddeellus*, *M. raddeellus*, and *E. bellus*. Lower row from left to right: *E. vin-*  
*culellus*, *E. labellus*, *E. circulus*, *M. expansa* and *E. sobioides*.



## Tympanal organs

The tympanal organs (figs. 3, 4) have two functions, detection of bat-sounds and locating the sounds made the female (Minet 1983). The latter is deduced from the sexual dimorphism of *Catharia pyrenaelis* (Dup.) (Pyraloidea: Crambidae: Odontiinae). The male of this diurnal species has normally developed tympanal organs, whereas the female has atrophic tympanal organs. The dimorphism does not occur in night-flying species which are prone to be attacked by bats. This suggests that the male uses his tympanal organs to locate the female producing sounds by vibrating her wings. Dahm et al. (1971) demonstrated the use of the tympanal organs in the localization of partners in *Achroia grisella* (Fabricius) (Pyraloidea: Pyralidae: Galleriinae) in combination with the use of pheromones. The diagnostic value at subfamily and family level has been demonstrated by Minet (1982, 1983, 1985, 1991) and Maes (1985).

The terminology of the tympanal organs follows Maes (1985). In *Euchromius* the tympanum and conjunctivum make an angle and the bulla tympani are of the 'open' type. Consequently, *Euchromius* has tympanal organs of the 'Crambidae' type, as defined by Minet (1982) and Maes (1985). The tympanal organs are located ventrally on the anterior part of the abdomen.

Description of the tympanal organs in *Euchromius* (figs. 3, 4). – The praecinctorium is simple sac-shaped without a thorn-like sclerotization at the connection with the pons tympani. The bulla tympani are bean-shaped. The fornix tympani, supporting the conjunctivum, are well developed and clearly visible. The rami tympani are connected, forming a well defined semi-circle, enclosing the sacci tympani. At species level the sacci tympani vary in size and shape. Ventrally the two sacci tympani are connected by a membrane, the conjunctivum saccus tympani. In many cases, the width with which the two sacci tympani are connected, in combination with the position of the conjunctivum saccus tympani provide good diagnostic characters at the species level. The processi tympani vary in size and are largest in *ramburiellus*, occupying nearly half the breadth of the bulla tympani in that species. The processus tympani is orientated dorsal-ventrally and thus it is not always possible to measure their size.

The processus tympani is connected to the tympanum by the scoloparium and spinula. The scoloparium is a chordonotal nerve consisting of four scolopale cells (Minet 1983). In mounted specimens, the scoloparium is almost always lost, due to necessary cleaning of the interior of the bulla tympani. The scoloparium is connected to the spinula, a sclerite on the inside of the tympanum. At a magnification of 40 times it usually can be seen as a small point or minute

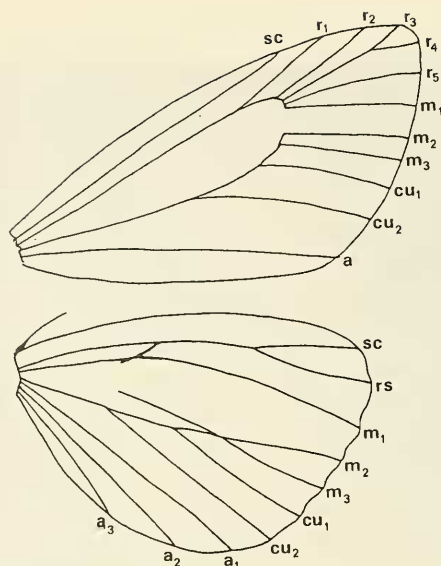


Fig. 10. Venation in *Miyakea*.

line. In Crambinae spinulae have several distinct shapes. The spinula in *Euchromius* (fig. 4) is a simple hair-like structure, without a distinct swollen base, implanted at an oblique angle on a minute elevation and gradually tapering towards the distal end. The distal end can be clean and thus pointed, or may still have some remains of the scoloparium or tracheal tissue connected to it, giving it a frayed tip. To estimate the type of spinula of a genus or species usually many slides should be checked. The spinula must be viewed from several angles before a correct lateral drawing of it can be made. The venula prima, situated lateral to the fornix tympani, is always present. The venula secunda, posterior of the fornix tympani, is more or less an extension of the venula prima. In *Euchromius* the venula secunda is well developed.

## Distribution

The highest numbers of species occur in Africa (19), the Mediterranean (16) and the Near and Middle East (16). Australia has only one single species, North America two and South America four. No species are found on the islands of South-East Asia. *E. subcambridgei* has a disjunct distribution in the Sudan, Tunesia and the Cape Verdes. *E. ocellus* with an almost cosmopolitic distribution seems to be a migratory species which establishes temporary populations in localities far outside its main distribution area from time to time.

## Biology

*E. ocellus* has been mentioned infesting food (Hinton 1943). I am not aware of any recent confirmation of larvae found in food-products and, therefore I am sceptical about this claim. The caterpillars of several species have been reared from dead leaves near the base of plants, accidentally larvae attack living plants and flower-heads. Transportation of pupae with plant remains seems likely (Meyrick 1895). Dead leaves of mainly Compositae and one species of Dipsacaceae are recorded as foodplants (Millière 1868).

*Euchromius* species are found in various habitats, but most of them prefer dry and warm areas; no species really enters the tropical rain forest. *E. gnathosellus* and *zephyrus* have only been found in plantations mixed with remains of secondary forest in West-Africa, once covered with lowland tropical rain forest. Several species are restricted to mountain areas and plateaus e.g. *tanalis* and *hampsoni* in Africa, *nivalis* in China and *saltalis* in South America. Many species are found from sea-level up to more than 1000 m altitude. *E. ocellus* is recorded from the highest altitude, 4200 m (Afghanistan).

## Excluded species

*E. brunnealis* (Hampson, 1919), *micralis* (Hampson, 1919) and *pygmaea* (Hering, 1903) do not belong to the genus *Euchromius* in the present sense. They should be classified in a separate genus to be described in a forthcoming paper (Schouten, in prep.).

*E. delicatalis* (Hampson, 1919) is transferred to *Aurotalis* Bleszynski, a genus not closely related to *Euchromius*. Bleszynski (1970) regards *Aurotalis* a close relative of *Conotalis* Hampson, 1919. The forewing of *E. delicatalis* (fig. 2) has the Sc partly fused with R1, whereas R2 is fused with R3+R4, a feature never encountered in *Euchromius* (fig. 1). The male genitalia of *delicatalis* lack any processus on the valvae, which are broad and of the same type as in *Aurotalis*.

*E. kuphitincta* (Lucas, 1898) was transferred from *Diptychophora* to *Euchromius* by Gaskin (1975a). The type material of this species has not been located (Gaskin 1975a). The original description (Lucas 1898: 80), however, leaves no doubt that the species is not a member of *Euchromius*. Several dentate lines in the forewing are mentioned and the base of the hindwing is said to have up to six or seven fine violet fuscous transverse lines. Both features have never been found in *Euchromius*. Especially the description of the hindwing suggests attribution of this species to the Diptychorini or the Pyraustinae. As long as the holotype has not been located it will be impossible to classify this species with certainty.

## Checklist of extant *Euchromius* Guenée

1. *ornatus* sp. n.
2. *circulus* sp. n.
3. *cornus* Schouten, 1990
4. *californicalis* (Packard, 1873)
5. *matador* Bleszynski, 1966
6. *gnathosellus* Schouten, 1988
7. *zephyrus* Bleszynski, 1962
8. *tanalis* Schouten, 1988
9. *mythus* Bleszynski, 1970
10. *geminus* Schouten, 1988
11. *galapagosalis* Capps, 1966
12. *limaellus* Bleszynski, 1967
13. *minutus* sp. n.
14. *saltalis* Capps, 1966
15. *ocellus* (Haworth, 1811)
  - cyrilli* (Costa, 1829)
  - funiculella* (Treitschke, 1832)
  - texana* (Robinson, 1870)
  - gigantea* (Turati, 1924)
  - qadrii* (Ahmad et al., 1982) **syn. n.**
16. *pulverosus* (Christoph, 1887)
  - cochlaearellus* (Amsel, 1949) **syn. n.**
17. *confusus* sp. n.
18. *vinculellus* (Zeller, 1847)
  - corsicalis* (Hampson, 1919)
  - asbenicola* (Rothschild, 1921)
  - joiceyella* (Schmidt, 1934)
  - bahrutella* (Amsel, 1949)
19. *anapiellus* (Zeller, 1847)
20. *bellus* (Hübner, 1796)
21. *bleszynskiellus* Popescu-Gorj, 1964
  - roxanus* Bleszynski, 1965
22. *bleszynskii* Roesler, 1975
23. *scobiolae* Bleszynski, 1965
24. *superbellus* (Zeller, 1849)
  - wockeella* (Zeller, 1863)
  - cypriusella* (Amsel, 1958)
25. *keredjellus* (Amsel, 1949)
26. *malekalis* (Amsel, 1961)
27. *mouchai* Bleszynski, 1961
28. *nivalis* (Caradja, 1937)
29. *rayatellus* (Amsel, 1949)
30. *gozmanyi* Bleszynski, 1961
31. *gratiosellus* (Caradja, 1910)
  - gartheellus* Derra, 1985
- siuxellus* Ganey & Hacker, 1986
32. *jaxartellus* (Erschoff, 1874)
33. *ramburiellus* (Duponchel, 1836)
  - zonellus* (Zeller, 1847)
  - luteella* (Caradja, 1910)
  - islamella* (Amsel, 1949)
34. *zagulajevi* Bleszynski, 1965
35. *donum* Schouten, 1988
36. *sudanellus* Bleszynski, 1965
37. *subcambridgei* Bleszynski, 1965
38. *cambridgei* (Zeller, 1867)
  - luciella* (Chrétien, 1907)
  - prototypa* (Meyrick, 1935)
  - congruentella* (Amsel, 1958)
  - szijjartoi* (Gozmany, 1959)
  - ilkui* (Gozmany, 1959)
39. *viettei* Bleszynski, 1961
  - karsholti* Ganey, 1987 **syn. n.**
40. *hampsoni* (Rothschild, 1921)



41. *klimeschi* Bleszynski, 1961
42. *discopis* (Hampson, 1919)
43. *labellum* Schouten, 1988
44. *aris* Schouten, 1988
45. *erum* Schouten, 1988
46. *locustus* Schouten, 1988
47. *nigrobasalis* Schouten, 1988

### Key to the species of *Euchromius* and *Miyakea*

The key can only be used when specimens are in good condition. For a definite identification one should check the genitalia.

1. Eight, nine or ten black dots at termen of the forewing ..... 2
  - Four to seven black dots at termen of the forewing (in *E. rayatellus*, *E. superbellus* and *E. gozman-yi* an eighth dot in apical position may occur) .. 58
2. Medial fascia double, divided by a silvery or white line, inner fascia sometimes reduced ..... 3
  - Medial fascia single ..... 28
3. Black terminal dots arranged according to the formula 2-2-2, 2-2-2-2-1 or 2-2-2-2-2, a group of three dots is never present ..... 4
  - Black terminal dots arranged to the formula 1-2-3-2, 2-2-3-2, or 2-3-1, a group of three dots is always present ..... 6
4. Frons rounded without a point ..... *M. sinevi*
  - Frons pointed, with or without ridges ..... 5
5. Frons pointed, slender with several ridges (fig. 14). Forewings slender, tapering at the apex ..... *E. circulus*
  - Frons produced forward, pointed, ridges absent. Forewings normal ..... *E. matador*
6. Frons strongly produced forward, armed with several ridges ..... *E. zephyrus*
  - Frons produced forward, one point, a ventral ridge may be present or not (figs. 12, 21, 38) .. 7
7. Clypeus laterally lobbed, lobes produced forward (fig. 12) ..... *E. ornatus*
  - Clypeus not distinct laterally lobbed (figs. 21, 38) ..... 8
8. The outer medial fascia ending at circa one-third of the dorsum; line between double fascia usually whitish, seldom only silvery ..... 9
  - The outer medial fascia ending at one-fourth to one-sixth of the dorsum; line between double fascia silvery ..... 10
9. The outer medial fascia nearly always bent outward, especially near the inner margin. Forewing, area adjacent to black terminal dots broad and whitish ..... *E. bellus*
  - The outer medial fascia straight; inner medial fascia sometimes reduced; forewing, area adjacent to black terminal dots narrow and usually yellow ... *E. anapiellus*
10. Frons with clear ventral ridge, frons strongly conical with corneous point ..... *E. gnathosellus*
  - Frons without ventral ridge (figs. 21, 38), frons strongly conical or normally projecting, with corneous point ..... 11
11. Forewing brownish grey from base to inner medial fascia, with no or little irroration by darker scales ..... *E. galapagosalis*
  - Forewing, groundcolour creamy white, irroration by darker scales from base to inner medial fascia ..... 12
12. Males (the male of *E. geminus* is unknown) ... 13
  - Females ..... 20
13. Gnathos with two basal projections (figs. 99, 100) ..... 14
  - Gnathos without two basal projections (figs. 106, 109) ..... 15
14. Juxta without two large dorsal projections (fig. 100) ..... *E. californicalis*
  - Juxta with two large dorsal projections (fig. 99) ..... *E. cornus*
15. Aedeagus with one group of cornuti forming a packed row (figs. 106, 107) ..... 16
  - Aedeagus with three groups of cornuti (figs. 109-112) ..... 17
16. Cucullus club-shaped. Processus basalis normal sized, not blade-like at base. Two clear processi inferior valvae (fig. 106) ..... *E. tanalis*
  - Cucullus pointed. Processus basalis long, broad, blade-like at base. One clear processus inferior valvae (fig. 107) ..... *E. mythus*
17. The largest group of cornuti coiled, having a woodrass appearance (fig. 109) ..... *E. limaellus*
  - The largest group of cornuti more or less straight, forming a double row (figs. 110-112) ..... 18
18. Dorsal spine of processus basalis arising from middle of blade (fig. 112) ..... *E. ocellus*
  - Dorsal spine of processus basalis arising from outer corner (figs. 110, 111) ..... 19
19. Aedeagus with several cornuti at each side, pointing backwards giving the aedeagus a spear-like appearance (fig. 111) ..... *E. saltalis*
  - Aedeagus without backwards pointing cornuti at the sides (fig. 110) ..... *E. minutus*
20. Ostium tooth-shaped (figs. 156, 157) ..... 21
  - Ostium rodstool or lip-shaped, not tooth-shaped (figs. 151, 160) ..... 22
21. Ductus bursae with light sclerotizations near ductus seminalis. Sclerotization under ostium most prominent at the edges. Ostium longer than broad, circa 1.5 times, (fig. 156) ..... *E. tanalis*
  - Ductus bursae without sclerotizations near ductus seminalis. Sclerotization under ostium more in centre, less at edges. Ostium about as high as broad (fig. 157) ..... *E. mythus*
22. Signa of equal size (figs. 151, 162, 163) ..... 23

- Signa unequal in size (figs. 158, 160, 161) .... 25
- 23. Ductus bursae short, not clearly sclerotized (fig. 151) ..... *E. cornus*
- Ductus bursae long, clearly sclerotized (figs. 162, 163) ..... 24
- 24. Hook-like projections lateral of the ostium. Length ductus bursae circa two times that of bursa copulatrix. Edges of tergite VIII connected (fig. 162) ..... *E. saltalis*
- Hook-like projections lateral of ostium absent. Length ductus bursae circa three times that of bursa copulatrix. Edges of tergite VIII not connected (fig. 163) ..... *E. ocellus*
- 25. Edges of tergite VIII connected or not, wrinkled (fig. 160) ..... 26
- Edges of tergite VIII connected, not wrinkled (fig. 161) ..... 27
- 26. Rim of ostium clearly dentate ..... *E. limaellus*
- Rim of ostium not dentate ..... *E. californicalis*
- 27. Larger signum three times as long as smaller signum (fig. 158) ..... *E. geminus*
- Larger signum less than two times as long as smaller signum (fig. 161) ..... *E. minutus*
- 28. Medial fascia broad, the entire length sprinkled with black scales, reminding of a fingerprint. Anterior area of the forewing for most part covered with black scales ..... *E. nigrobasalis*
- Medial fascia normal, not or sprinkled with silvery scale. Anterior area of the forewing not covered with black scales, sometimes a few black scales present, anterior area usually greyish or brownish ..... 29
- 29. Medial fascia clearly angled inwardly below the costa ..... 30
- Medial fascia straight or gently arched, part near inner margin may be lost or faint ..... 33
- 30. Males ..... 31
- Females ..... 32
- 31. Uncus with a dorsal thorn (fig. 137) ..... *E. sudanellus*
- Uncus without a dorsal thorn (fig. 139) ..... *E. cambridgei*
- 32. One long and one shorter signum, a somewhat triangular, broad sclerotized plate at the ventral site of membrane of tergite VIII (fig. 187) ..... *E. sudanellus*
- Signa of equal size, two very small slender sclerotized plates at the ventral site of membrane of tergite VIII (fig. 189) ..... *E. cambridgei*
- 33. Tegulae evenly mottled, no dark patch in the middle (fig. 5) ..... 34
- Tegulae with dark patch in the middle (fig. 6) ... 44
- 34. Fringes of forewing whitish at base, then evenly ochreous brown (fig. 7) ..... 35
- Fringes of forewing with up to three dark lines (fig. 8) ..... 39
- 35. Males (male of *E. zagulajevi* is unknown) ..... 36
- Females ..... 37
- 36. Cucullus with slight constriction about halfway. Stalk of gnathos not terminally connected to basal part; stalk and basal part at right angle (fig. 113) ..... *E. confusus*
- Cucullus without constriction. Stalk of gnathos terminally connected to basal part; no clear angle between stalk and basal part (fig. 114) ..... *E. pulverosus*
- 37. Ostium without prominent projection (fig. 184) ..... *E. zagulajevi*
- Ostium with prominent projection (figs. 164, 165) ..... 38
- 38. Projection of ostium with parallel sides (fig. 164) ..... *E. confusus*
- Projection of ostium without parallel sides, sides convex (fig. 165) ..... *E. pulverosus*
- 39. Males ..... 40
- Females ..... 42
- 40. Processus of sacculus slender, slightly bent upward, not or slightly overlapping cucullus; processus inferior valvae rounded, not elongated (fig. 134) ..... *E. gratiosellus*
- Processus of sacculus stout, clearly bent upward, overlapping cucullus; processus inferior valvae flat, elongated (fig. 135) ..... 41
- 41. Processus of sacculus reaching almost halfway the cucullus, at least one and a half times as long as the breadth of cucullus (fig. 136) ..... *E. ramburiellus*
- processus of sacculus at most reaching one-third of the cucullus, at most as long as breadth of cucullus (fig. 135) ..... *E. jaxartellus*
- 42. Ductus bursae under ostium only slightly enlarged, with, only minor, second bulb-like projection (fig. 170) ..... *E. gratiosellus*
- Ductus bursae under ostium enlarged, with clearly separated sac-like projection (figs. 183, 185) .. 43
- 43. Projection of ostium long, extending over membrane of tergite VIII (fig. 185) ... *E. ramburiellus*
- Projection of ostium short, broad, circa equal-sided, triangular, top just reaching membrane of tergite VIII (fig. 183) ..... *E. jaxartellus*
- 44. Frons conical with a small point (figs. 44, 70). Fringes of the forewing with several dark lines (fig. 8) or evenly brownish-grey at the end (fig. 7) ..... 45
- Frons bluntly produced forward, without point (figs. 88, 96). Fringes of the forewing evenly brownish-grey at the end (fig. 7) ..... 47
- 45. Fringes of forewing with several dark lines (fig. 8) ..... 46
- Fringes of forewing evenly brownish-grey (fig. 7) ..... 80

46. Labial palp two; subterminal fascia of hindwing absent; fringes of forewing creamy white at base, then two brown lines ..... *E. donum*
- Labial palp three; subterminal fascia of hindwing present; fringes not clearly creamy white at base, up to three brown lines ..... *E. bleszynskiellus*
47. Males ..... 48
- Females ..... 53
48. Gnathos without two dorsal thorns and terminal part, processus basalis hardly visible or absent (figs. 145, 147, 148) ..... 49
- Gnathos with two dorsal thorns and terminal part, processus basalis clearly visible (figs. 140, 143, 144) ..... 51
49. Tegumen with appendix angularis (fig. 148) ..... *E. locustus*
- Tegumen without appendix angularis (figs. 145, 147) ..... 50
50. Valvae with many heavy spines (fig. 147) ..... *E. erum*
- Valvae without heavy spines (fig. 145) .... *E. aris*
51. Dorsal spike at base of processus of sacculus (fig. 144) ..... *E. discopis*
- Dorsal spike at base of processus of sacculus absent (figs. 140, 143) ..... 52
52. Processus basalis narrowing abrupt, anterior part of aedeagus normal (fig. 140) ..... *E. viettei*
- Processus basalis narrowing soon, but gradual, anterior part of aedeagus very slender (fig. 143) .  
..... *E. hampsoni*
53. Bursa copulatrix with two signa (fig. 195) .... 54
- Bursa copulatrix with one signum (figs. 190, 193) ..... 55
54. Projection formed by connected edges of tergite VIII broadest at its base (fig. 195) ..... *E. aris*
- Projection formed by connected edges of tergite VIII not broadest at base, but more posterior (fig. 197) ..... *E. locustus*
55. Ductus bursae for most part strongly sclerotized with large cornuti (fig. 196) ..... *E. erum*
- Ductus bursae not strongly sclerotized (figs. 190, 191, 193) ..... 56
56. Ostium tooth-shaped (fig. 193) ..... *E. discopis*
- Ostium not tooth-shaped (figs. 190, 191) .... 57
57. Lamella antevaginalis without anterior fold (fig. 190) ..... *E. viettei*
- Lamella antevaginalis with clear anterior fold (fig. 191) ..... *E. hampsoni*
58. Groundcolour of the forewing pure white, usually a clear dark brown to black spot in posterior area ..... *E. nivalis*
- Groundcolour dirty to creamy white ..... 59
59. Medial fascia double ..... 60
- Medial fascia single ..... 65
60. Yellow apical marking on forewing touching medial fascia ..... *M. expansa*
- Yellow apical marking clearly separated from medial fascia ..... 61
61. Males ..... 62
- Females ..... 63
62. Processus basalis absent (fig. 118) ... *M. lushmanus*
- Processus basalis large, distinct (fig. 119) ..... *M. raddeellus*
63. Under the ostium an elongated pouch, clearly separated from the ductus bursae (fig. 199) ..... *M. sinevi*
- Elongated pouch under the ostium absent .... 64
64. Ostium without tongue-shaped projection (fig. 169) ..... *M. lushmanus*
- Ostium with tongue-shaped projection (fig. 167) ..... *M. raddeellus*
65. Medial fascia clearly angled inward below costa (fig. 9: *E. labellum*, *E. cambridgei*) ..... 66
- Medial fascia straight or slightly arched ..... 68
66. Medial fascia not sharply bent, angle in the middle of the wing ..... *E. subcambridgei*
- Medial fascia more sharply bent, angle closely below the costa ..... 67
67. Frons produced forward with point (fig. 90) ..... *E. cambridgei*
- Frons produced forward without point ..... *E. labellum*
68. Frons rounded, without point; area adjacent to black terminal dots white..... *E. klimeschi*
- Frons rounded or not, with, a sometimes very small, point, when absent then area to black terminal dots yellow ..... 69
69. Tegulae evenly mottled, no dark patch in the middle (fig. 5) ..... 70
- Tegulae with dark patch in the middle (fig. 6), if very faint then area adjacent to black terminal dots broad ..... 74
70. Area adjacent to black terminal dots narrow, usually yellow; subterminal line about midway between terminal dots and termination of posterior area ..... *E. vinculellus*
- Area adjacent to black terminal dots broad, white; subterminal line closer to termination of posterior area than to terminal dots ..... 71
71. Males ..... 72
- Females ..... 73
72. Dorsal edge of sacculus with pointed projection, stout spines at base of processus of sacculus absent (fig. 125) ..... *E. bleszynskii*
- Dorsal edge of sacculus without pointed projection, stout spines at base of processus of sacculus (fig. 126) ..... *E. scobiolae*
73. Ductus seminalis broad for some length, projection of ostium rectangular (fig. 174) ..... *E. bleszynskii*
- Ductus seminalis broad for a short length, projection of ostium rounded (fig. 175) .... *E. scobiolae*



74. Fringes of forewing with one or two ochreous brown lines, most clearly at the apex ..... 75  
 – Fringes of forewing highly shiny, evenly grey to grey-brown, no ochreous brown lines ..... 80  
 75. Males ..... 76  
 – Females ..... 78  
 76. Aedeagus without cornuti (fig. 129) *E. malekalis*  
 – Aedeagus with two or three groups of cornuti (figs. 128, 130) ..... 77  
 77. Aedeagus with two groups of cornuti, processus of sacculus short, but clearly free (fig. 128) ..... *E. keredjellus*  
 – Aedeagus with three groups of cornuti, processus of sacculus indistinct (fig. 130) ..... *E. mouchai*  
 78. Ostium bean-shaped (fig. 179) ..... *E. malekalis*  
 – Ostium lip-shaped (figs. 177, 178) ..... 79  
 79. Edges of tergite VIII connected, knot-shaped at point of connection (fig. 177) ..... *E. keredjellus*  
 – Edges of tergite VIII not connected (fig. 178) .... *E. mouchai*  
 80. Males ..... 81  
 – Females ..... 83  
 81. Dorsal thorns of gnathos elongated, terminal part long (fig. 127) ..... *E. superbellus*  
 – Dorsal thorns of gnathos normal, short, terminal part short (fig. 132) ..... 82  
 82. Aedeagus with three groups of cornuti; processus of sacculus long, cucullus slender (fig. 132) ..... *E. rayatellus*  
 – Aedeagus with one large ridged cornutus; processus of sacculus short, cucullus broad (fig. 133) ... *E. gozmanyi*  
 83. Ductus bursae with sleeve-like structure above ductus seminalis (fig. 182) ..... *E. gozmanyi*  
 – Ductus bursae without sleeve-like structure (figs. 176, 180) ..... 84  
 84. Lamella antevaginalis large, shield-shaped, split in the middle; membrane of tergite VIII without thumb-like projection (fig. 180) ..... *E. rayatellus*  
 – Lamella antevaginalis small, not shield-shaped; membrane of tergite VIII with thumb-like projection (fig. 176) ..... *E. superbellus*

### 1. *Euchromius ornatus* sp. n. (figs. 11–13, 98)

Type material. – Holotype: ♂, [India] 'Dibidi, N. Coorg. Newcome 5.12.06', GS 17617 (BMNH).

Diagnosis. – Differs from all species in having the clypeus laterally lobed in combination with the presence of a group of three dots in the terminal black dots.

External characters male (fig. 11). – Wingspan 18 mm. Frons produced forward into very sharp point,

creamy white to light brown, laterally lobed, ventral ridge large; vertex creamy white; labial palp two, sides creamy white at base, becoming brown, creamy white from above and below; maxillary palp creamy white, brown ringed at base of last segment; antenna creamy white. Thorax brown; patagia brown; tegulae brown, evenly mottled. Forewing, groundcolour white densely suffused with ochreous to dark brown scales; medial fascia double, slightly arched, running one-fourth to one-fifth of the dorsum; subterminal line dark brown, closer to termination of posterior area than to terminal dots; area adjacent to terminal dots white; eight black terminal dots, formula 2-2-3-1; fringes shiny, at least one brownish line, too worn to be described in more detail. Hindwing brown-grey, subterminal fascia inconspicuous, termen darkly bordered; fringes creamy white with brownish line.

Tergite VIII (fig. 12). – Sclerite normally sclerotized, only posteriormost part of posterior part visible.

Male genitalia (fig. 98). – Uncus basal-dorsal with crown-like projection armed with heavy spines, more posteriorly bearing tubercle; gnathos longer, two dorsal thorns large, terminal part long; tegumen without appendix angularis; sacculus normal, processus of sacculus absent, processus basalis small, bent inward, placed central on edge of valvae, processus inferior valvae very prominent, forming tuberkel, cucullus broad, sharply pointed upward; juxta triangular; vinculum normal; aedeagus small, two faint groups of very small cornuti-like sclerotizations.

Biology. – Unknown. Holotype caught in December.

Distribution (fig. 13). – Southern India.

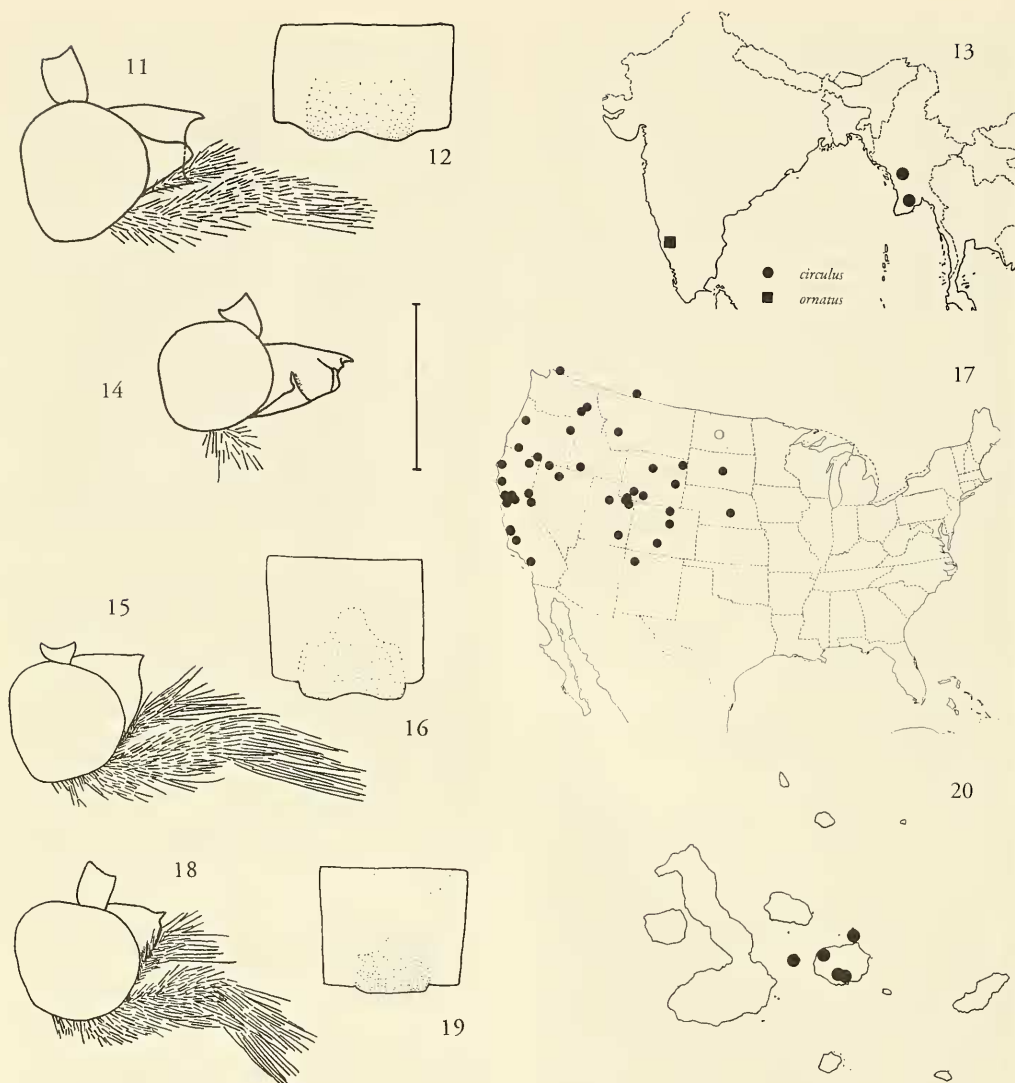
Etymology. – *Ornatus* (Latin) refers to the graceful ornamentation on the uncus.

### 2. *Euchromius circulus* sp. n. (figs. 9, 13, 14, 150)

Type material. – Holotype: ♀, [Burma] 'Rangoon', GS 17618. Paratype: 1 ♀, [Burma] 'Thyetmyo', GS 17765 (holotype and paratype in BMNH).

Diagnosis. – Differs from all species with a double fascia, except *E. matador*, in lacking a group of three black terminal dots. Can be distinguished from *E. matador* by the conspicuous ridges on the frons.

External characters female (figs. 9, 14). – Wingspan 17 mm. Frons slender, sharply produced forward, clear point and several ridges, light brown, ventral ridge very small; vertex light brown; labial palp two, sides creamy white becoming light brown, creamy white from above and below; maxillary palp creamy white; antenna creamy white. Thorax light brown; patagia light brown to brown; tegulae light



Figs. 11-20. *Euchromius* species. – 11, *E. ornatus*, head: lateral aspect, scales removed; 12, idem, sclerite of tergite VIII; 13, distribution map of *E. ornatus* and *E. circulus*; 14, *E. circulus*, lateral aspect of head, scales removed, labial palp partly missing, maxillary palp completely missing; 15, *E. californicalis*, head: lateral aspect, scales removed; 16, idem, sclerite of tergite VIII; 17, idem, distribution map (open circle: exact locality not found); 18, *E. galapagosalis*, head, lateral aspect, scales removed; 19, idem, sclerite of tergite VIII; 20, idem, distribution map. Scale bar 0.5 mm to figs. 11-12, 14-16, 18-19.

brown to brown evenly mottled. Forewing, ground-colour creamy white only posterior area densely suffused with ochreous to dark brown scales; medial fascia double, nearly straight, running to one-fourth of the dorsum; subterminal line brown, about midway between terminal dots and termination of posterior area, area adjacent to terminal dots white, nine black terminal dots, formula 2-2-2-2-1; fringes shiny

creamy white with two brown lines. Hindwing grey-brown, subterminal fascia present; termen darkly bordered; fringes creamy white with brownish line.

Female genitalia (fig. 150). – Papillae anales normal; membrane of tergite VIII with three narrow sclerotized bands, edges of tergite VIII around papillae anales many folded; ostium complex heavily sclerotized; ductus bursae long, narrow; ductus seminalis



starting broad narrowing soon; bursa copulatrix oblong, two signa, club-shaped.

Male. – Unknown.

Biology. – Unknown.

Distribution (fig. 13). – Burma.

Etymology. – *Circulus* (Latin) refers to the circular, ring-like shape of tergite VIII.

### 3. *Euchromius cornus* Schouten, 1990

(figs. 99, 151)

*Euchromius cornus* Schouten, 1990: 265. Holotype: ♂, 'Sherlock R. W. Australia. E. Clements. 98-188', GS 17616 (BMNH) [examined].

Material. – 21 ♂, 16 ♀.

Diagnosis. – Externally almost indistinguishable from *Euchromius* species with a double medial fascia and frons with one point. Differs in male genitalia from all species in having the uncus armed with a short, double, dorsal projection. Differs in female genitalia from *E. geminus*, *E. californicalis*, *E. limaelus*, *E. ocellus*, *E. saltalis*, *E. mythus* and *E. tanalis* by its short ductus bursae without clear sclerotizations.

Distribution. – Australia.

### 4. *Euchromius californicalis* (Packard, 1873)

(figs. 15-17, 100, 152)

*Eromene californicalis* Packard, 1873: 264. Lectotype (designated by Capps 1966: 5): ♂, 'Type 14297'. (MCZC) [examined].

Material. – 98 ♂, 11 ♀. Canada: Alberta: Manyberries, 1 ♀ (BMNH). British Columbia: Nicola, 1 ♂ (BMNH). USA: California: 2 mi SW of Moraga, 2 ♂ (CISC); 4 mi E of Petaluma, 1 ♂ (RTAS), 2 ♂ (UCDC); 8 km N of Tuckee, 1 ♂ (ICCM); 10 mi W of Simmler, 1 ♂ (CISC); Arcata, 1 ♂ (UCDC); Berkely, 1 ♂ (CASC), 1 ♂ (CISC), 1 ♂ (LACM); Bieber, 1 ♂ (UCDC); Cambria, 4 ♂ (AMNH), 1 ♂ (RTAS); Davis, 1 ♂ (CASC), 2 ♂ (UCDC); El Cerrito, 1 ♂ (CASC), 1 ♂ (CISC); Half Moon Bay, 1 ♂ (ICCM); Long Beach, 1 ♂ (AMNH); Moraga, 5 ♂ (CISC); Napa, 3 ♂ (BMNH), 3 ♂ (CASC), 5 ♂ (MCZC); Novata, 2 ♂ (CASC); Petaluma, 6 ♂ (LACM); Pinole, 1 ♂ (CISC); Sacramento, 1 ♂ (UCDC); San Simeon, 3 ♂ (AMNH), 1 ♂ (RTAS); Santa Rosa, 1 ♂ (LACM); Sonoma, 1 ♂ (CISC); Topaz, 1 ♂ (LACM); Ukiah, 1 ♂ (CISC); Vacaville, 1 ♂ (UCDC). Colorado: Denver, 6 ♂ (BMNH); Fort Collins, 2 ♂ (AMNH); Moffat, 2 ♂, 2 ♀ (ICCM), 1 ♂, 1 ♀ (RTAS). Idaho: East Fork Jarbidge, 1 ♂ (LACM); Moscow, 2 ♂ (AMNH). Montana: Butte, 1 ♀ (MNHN). Nebraska: Grand Island, 1 ♂ (ICCM). Nevada: 18 mi N of Paradise Valley, 1 ♂ (AMNH); 40 mi SW of Denio, 1 ♂ (CUIC). New Mexico: Chaca Canyon Nat. Mon., 1 ♂ (LACM). South Dakota: 15 km W of Gattysbury, 1 ♀ (GIEL). North Dakota: Slope Co. (locality not found), 1 ♂ (AMNH). Oregon: 2 mi S of Ukiah, 1 ♂ (CISC); Baker, 2 ♂ (AMNH); Corvallis, 1 ♂ (AMNH); Klamath, 2 ♂ (CISC); New Pine Creek, 1 ♂ (ZMAN). Utah: Hanksville, 1 ♂ (RTAS); Provo, 1 ♂, 1 ♀ (MCZC); Vernal, 1 ♂, 2 ♀ (ICCM), 1 ♂, 1 ♀ (RTAS). Washington: Pullman, 2

♂ (ANSP); 1 ♂ (CUIC). Wyoming: 5 mi N of Sundance, 1 ♂ (AMNH); 25 mi S of Bittercreek, 1 ♂ (ICCM); Douglas, 3 ♂ (CASC); Lone Tree, 1 ♀ (ICCM); Rock Springs, 1 ♀ (AMNH); South Fork of Crazy Woman Creek, 1 ♀ (CASC).

Diagnosis. – Externally difficult to separate from species with a double fascia and frons with one clear point. Differs from *E. ocellus*, *E. galapagosalis*, *E. saltalis*, *E. minutus*, *E. limaelus*, *E. mythus* and *E. tanalis* in male genitalia by the basal projections on the gnathos, from *E. cornus* in lacking the projections of the juxta. *E. californicalis* can be distinguished in female genitalia by a mushroom-shaped ostium in combination with signa unequal in size and a drop-shaped sclerotization in the membrane of tergite VIII.

External characters male, female (fig. 15). – Wingspan 20-24 mm. Frons sharply produced forward into clear point, creamy white to light brown, no ventral ridge; vertex creamy white; labial palp two and a half to three, sides white at base, becoming creamy white to light brown, creamy white from above and below; maxillary palp white to creamy white, brown ringed at base of last segment; antenna creamy white, from about the middle very inconspicuously darkly ringed. Thorax creamy white; patagia creamy white; tegulae creamy white evenly mottled, sometimes with dark patch in the middle. Forewing, groundcolour white, densely suffused with ochreous to dark brown scales; medial fascia double, gently arched to nearly straight, running to one-fifth to one-sixth of the dorsum; subterminal line ochreous brown, inconspicuous, closer to termination of posterior area than to terminal dots; area adjacent to terminal dots broad, white; nine or eight black terminal dots, formula 2-2-3-2 or 2-2-3-1; fringes shiny creamy white with two or three brown lines. Hindwing creamy white to brown-grey, subterminal fascia present or not, termen darkly bordered; fringes white with brownish line.

Tergite VIII (fig. 16). – Sclerite normally sclerotized, posterior part rectangular, stalk broad ending abruptly, anterior pattern invisible.

Male genitalia (fig. 100). – Uncus slightly bent, with thin dorsal crest; gnathos longer, two dorsal-basal projections, two dorsal thorns, terminal part long; tegumen without appendix angularis; sacculus normal, processus of sacculus absent, processus basalis small, two processi inferiores valvae; cucullus bent upward, with strong basal fold forming clear lob-like projection; juxta small, triangular; vinculum long; aedeagus long, slender with three groups of cornuti, sometimes only two clearly visible.

Female genitalia (fig. 152). – Papillae anales small; membrane of tergite VIII with inconspicuous drop-shaped sclerotization, edges of tergite VIII grooved, not connected; ostium mushroom-shaped, not clear,

roughly granulate; ductus bursae long, more strongly sclerotized in upper part; ductus seminalis narrow; bursa copulatrix oblong, with two long signa, unequal in size.

Biology. — Unknown. Specimens caught from March to September, with peaks in June, July and August. Recorded from 300 m up to 2500 m altitude.

Distribution (fig. 17). — A West-Nearctic distribution. Canada: British Columbia and Alberta. USA: Washington, Idaho, Montana, North Dakota, Oregon, Wyoming, California, Nevada, Uta, Colorado, Nebraska and New Mexico.

Remarks. — The lectotype specimen in MCZC bears only the label 'Type 14297'. A second specimen without any label is presumably a paralectotype. The third specimen can almost certainly be excluded from the syntype series since it has not been collected by Edwards (Miller & Hodges 1990). The label reads: C.H.F. March 95 Cal Behr 17, indicating that the specimen was caught in March 1895 which is after the date of publication of *californicalis*. The female genitalia figured by Corbet and Tams (1943: 72, figs. 125 and 162) do not belong to *E. californicalis*.

#### 5. *Euchromius matador* Bleszynski, 1966 (figs. 9, 101, 153)

*Euchromius matador* Bleszynski, 1966: 470. Holotype: ♂, 'Elisabethville Belgian Congo 4.V.1947 Ch. Seydel', GS 4342, type 8921 (CNCI) [examined]. Schouten (1988: 33) [redescription].

Material. — 20 ♂, 13 ♀.

Diagnosis. — Differs from all species, except *circulus*, in having a double medial fascia in combination with the lack of a group of three black terminal dots. Can be distinguished from *circulus* in lacking the ridges on the frons.

Distribution. — Tanzania and Zaire.

#### 6. *Euchromius gnathosellus* Schouten, 1988 (figs. 102, 154)

*Euchromius gnathosellus* Schouten, 1988: 35. Holotype: ♂, 'Degbeze loc 7. 12 km E Bouafle 15-XII-1983 at light, Cote D'Ivoire Bouafle R. T. A. Schouten & J. R. M. Buijsen', GS RS 101 (RMNH) [examined].

Material. — 14 ♂, 32 ♀.

Diagnosis. — Differs from all species, except *ornatus*, by its double medial fascia in combination with a clear ventral ridge, a sharply pointed frons and the presence of a group of three black terminal dots. Can be distinguished from *ornatus* in lacking the lateral lobes.

Distribution. — Senegal, Sierra Leone, Ivory Coast,

Ghana, Togo, Nigeria and the Central African Republic.

#### 7. *Euchromius zephyrus* Bleszynski, 1962 (figs. 103-105, 155)

*Euchromius zephyrus* Bleszynski, 1962: 129. Holotype: ♂, 'Ilesha So. Nigeria (Capt. Humfrey)', GS 7201 (BMNH) [examined]. Schouten (1988: 36) [redescription].

Material. — 27 ♂, 30 ♀.

Diagnosis. — Differs from all other species in having a much ridged frons and vertex.

Distribution. — Senegal, Mali, Ivory Coast, Ghana and Nigeria.

#### 8. *Euchromius tanalis* Schouten, 1988 (figs. 106, 156)

*Euchromius tanalis* Schouten, 1988: 30. Holotype: ♂, 'Tana R. B.E. Africa. 3800 ft. 2.i.99. R. Crawshaw 99-216', GS 17482 (BMNH) [examined].

Material. — 13 ♂, 2 ♀.

Diagnosis. — Difficult to distinguish externally from other species with a double medial fascia. Differs in male genitalia from all other species in having a club-shaped cucullus in combination with a packed row of cornuti in the aedeagus. In female genitalia it is characterized by a tooth-like ostium, the edges directly under the ostium also sclerotized and two signa of unequal length.

Distribution. — Ethiopia and Kenya.

#### 9. *Euchromius mythus* Bleszynski, 1970 (figs. 107, 157)

*Euchromius mythus* Bleszynski, 1970: 2. Holotype: ♂, 'Diego Suarez', GS 11310 (BMNH) [examined]. Schouten (1988: 32) [redescription].

Material. — 32 ♂, 19 ♀.

Diagnosis. — Difficult to distinguish externally from other species with a double medial fascia. Differs in male genitalia in having the long pointed processus basalis broad at base in combination with a slender long packed row of cornuti in the aedeagus. Differs in female genitalia in possessing a tooth-shaped ostium, the edges directly under the ostium not sclerotized and two signa of unequal length.

Distribution. — Kenya, Tanzania, Zaire, Malawi, Comoro Islands, Madagascar, Zimbabwe, Namibia and South Africa.

**10. *Euchromius geminus* Schouten, 1988**  
(fig. 158)

*Euchromius geminus* Schouten, 1988: 29. Holotype: ♀, 'Nairobi, BEA. may 1927 (D. M. Hopkins)', GS 17483 (BMNH) [examined].

Material. – 1 ♀.

Diagnosis. – Male unknown. Differs from other species with double medial fascia in female genitalia: the two signa unequal in length in combination with the ductus bursae sclerotized, only for a short part, directly under the ostium and having the edges of tergite VIII connected.

Distribution. – Kenya.

**11. *Euchromius galapagosalis* Capps, 1966**  
(figs. 18-20, 108, 159)

*Euchromius galapagosalis* Capps, 1966: 5. Holotype: ♀, 'South Seymour Galapagos April 23 1923', GS 12,115 (USNM) [examined].

Material. – 24 ♂, 63 ♀. Ecuador: Pinzon, 7 ♂, 2 ♀ (CASC), 2 ♂ (RTAS). Santa Cruz: Academy Bay, 7 ♂, 4 ♀ (BMNH), 4 ♂, 51 ♀ (CASC), 2 ♂, 4 ♀ (RTAS); Bella Vista Trail, 1 ♂ (CASC); Conway Bay, 1 ♂ (AMNH). South Seymour, 1 ♀ (AMNH), 1 ♀ (USNM).

Diagnosis. – Difficult to distinguish externally from *E. californicalis*, *E. cornus*, *E. tanalis*, *E. mythus*, *E. limaellus*, *E. ocellus*, *E. saltalis*, *E. minutus*. Can be separated from these species in having the anterior area of the forewing brownish grey with little or no irroration by darker scales. In male genitalia it differs in having a long slender aedeagus with three groups of cornuti, no lateral cornuti, in combination with a broad elongated processus basalis provided with a small terminal spine which does not arise dorsally. *E. galapagosalis* can be distinguished in female genitalia by the edges of tergite VIII being connected in combination with a toad-stool or lipshaped ostium without lateral folds and signa unequal in size.

External characters male, female (fig. 18). – Wingspan 15-21 mm. Frons produced forward with point, creamy white to light brown, no ventral ridge; vertex creamy white; labial palp two, sides white at base, becoming light grey-brown, light grey-brown from above and below; maxillary palp light brown, dark ringed at base of last segment; antenna creamy white to light grey. Thorax creamy white to light brown; patagia creamy white to light brown, sometimes with two inconspicuous, broad, longitudinal darker stripes; tegulae creamy white to light brown, evenly mottled. Forewing, groundcolour creamy white, posterior area densely suffused with dark brown scales, anterior area evenly greyish coloured,

without darker irroration or with but a few darker scales; medial fascia double, gently arched or straight, running to one-fifth of the dorsum; subterminal line brown, about midway between terminal dots and termination of posterior area; area adjacent to terminal dors white; eight, sometimes nine black terminal dots, formula 2-2-3-1 or 2-2-3-2; fringes shiny, with two, sometimes three brown lines. Hindwing grey, subterminal fascia faint, termen darkly bordered; fringes creamy white with brownish line.

Tergite VIII (fig. 19). – Sclerite normally sclerotized, posterior part rectangular, stalk ending abruptly, anterior part very faint, rounded.

Male genitalia (fig. 108). – Uncus normal, slightly bent; gnathos longer, two dorsal thorns, terminal part long; tegumen without appendix angularis; sacculus narrow, processus of sacculus absent, processus basalis broad, elongated, provided with small terminal spine, not arising dorsally, two processi inferiores valvae, cucullus very broad, bent upward, dorsal edge minutely dentate; juxta triangular with two small more strongly sclerotized dorsal projections; vinculum large; aedeagus long, three groups of cornuti, one of which consists of a double row of large cornuti.

Female genitalia (fig. 159). – Papillae anales normal; membrane of tergite VIII with inconspicuous sclerotized line, edges of tergite VIII only connected in middle part; ostium broad, lip-shaped, armed with minute spines; ductus bursae long, for most part strongly sclerotized; ductus seminalis narrow; bursa copulatrix oblong, two signa, unequal in size.

Biology. – Unknown. Specimens caught in January, February (top), April, May and July.

Distribution (fig. 20). – Endemic to the Galapagos Islands.

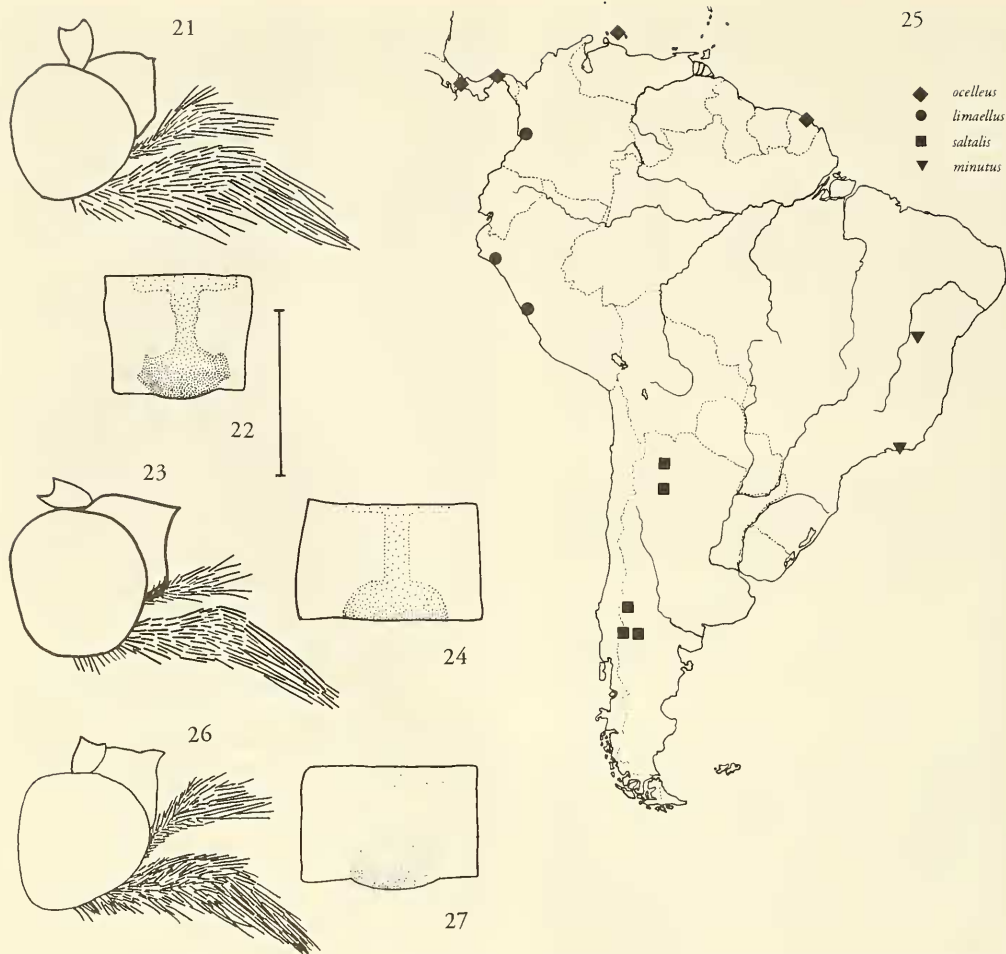
**12. *Euchromius limaellus* Bleszynski, 1967**  
(figs. 21, 22, 25, 109, 160)

*Euchromius limaellus* Bleszynski, 1967: 43. Holotype: ♂, 'Lima Peru 20 May 1920 Cornell Univ. Expedition lot 607 sub 55', GS 5161 (CUIC) [examined].

Material. – 4 ♂, 6 ♀. Columbia: Buena Ventura, 1 ♂ (ZMAC). Peru: Callao, 1 ♀ (MNHN); Lima, 1 ♂ (BMNH), 1 ♂, 4 ♀ (CUIC), 1 ♂, 1 ♀ (RTAS).

Diagnosis. – Almost indistinguishable from species with a double medial fascia and frons with one point. Male genitalia differ from the other species in largest group of cornuti being coiled, giving it a wood-rasp appearance. Differs in female genitalia from *E. geminus*, *E. minutus*, *E. cornus*, *E. ocellus*, *E. tanalis*, *E. mythus* in having a mushroom-shaped ostium without hooke-like projections, from *E. californicalis* in having the rim of the ostium clearly dentate.





Figs. 21-27. *Euchromius* species. – 21, *E. limaellus*, head, lateral aspect, scales removed; 22, idem, sclerite of tergite VIII; 23, *E. minutus*, head, lateral aspect, scales removed; 24, idem, sclerite of tergite VIII; 25, distribution map of *E. limaellus*, *E. minutus*, *E. saltalis* and *E. ocellus*; 26, *E. saltalis*, head, lateral aspect, scales removed; 27, idem, sclerite of tergite VIII. Scale bar 0.5 mm to figs. 21-24, 26-27.

External characters male, female (fig. 21). – Wingspan 17-18 mm. Frons produced forward with point, creamy white to brown, no ventral ridge; vertex creamy white; labial palp two to two and a half, sides white at base, becoming brown, creamy white from above and below; maxillary palp creamy white to light brown, dark ringed at base of last segment, terminal part white; antenna creamy white. Thorax creamy white to light brown; patagia creamy white to light brown with two broad longitudinal light brown stripes; tegulae creamy white, evenly mottled. Forewing, groundcolour creamy white, densely suffused with ochreous to dark brown scales; medial fascia double, arched or nearly straight, running to one-

fifth to one-sixth of the dorsum; subterminal line ochreous to dark brown, about midway between terminal dots and termination of posterior area; area adjacent to terminal dots white; nine black terminal dots, formula 2-2-3-2; fringes shiny, creamy white with two or three brown lines. Hindwing creamy white, subterminal fascia present or not, termen darkly bordered; fringes white to creamy white with brownish line.

Tergite VIII (fig. 22). – Sclerite normally sclerotized, posterior part rounded to rectangular, stalk quivered, anterior part faint.

Male genitalia (fig. 109). – Uncus tapering to sharp pointed tip; gnathos longer, two dorsal thorns, termi-

nal part long; tegumen without appendix angularis, membrane of tegumen armed with minute spines; sacculus narrow, processus of sacculus absent, processus basalis small, sharply pointed, two processi inferiores valvae, one at base of processus basalis, cucullus very broad, bent upward, dorsal edge finely dentate in basal half; juxta triangular with two small points; vinculum long; aedeagus long, three groups of cornuti, largest group coiled, having a woodrasp appearance.

Female genitalia (fig. 160). – Papillae anales small; membrane of tergite VIII without sclerotizations, edges of tergite VIII strongly grooved, only connected in the middle forming a rectangular patch above the ostium; ostium large mushroom-shaped, with clear, roughly granulate lip; ductus bursae long, strongly sclerotized, armed with many minute cornuti; ductus seminalis narrow; bursa copulatrix oblong to rounded with two long signa, unequal in size.

Biology. – Unknown. Caught in February and May.

Distribution (fig. 25). – Columbia and Peru.

### 13. *Euchromius minutus* sp. n.

(figs. 23-25, 110, 161)

Type material. – Holotype: ♂, '19.3 Joazeiro Bras. Exped. Penther '03', GS 465 Naturhistorisches Museum, Wien. Paratypes: 1 ♂, same data as holotype, 1 ♂, 1 ♀, same data as holotype, but caught on 16 Mar and 17 Mar respectively. All in NHMW. 1 ♂, 1 ♀, same data as holotype, but caught on 3.3 and 29.3 respectively, (RTAS). 1 ♀ 'Brasilia Rio de Janeiro 23.XII.1961 (port) Gy. Topal', GS 582 (ZMUC).

Diagnosis. – Externally almost indistinguishable from species with a double medial fascia and frons with one point. Differs in male genitalia from *E. californicalis*, and *E. cornus* in lacking the basal projections of the gnathos, from *E. tanalis*, *E. mythus*, *E. limaellus* and *E. ocellus* in having the dorsal edge of the processus basalis minutely dentate, from *E. saltalis* in lacking the lateral cornuti of the aedeagus. Differs in female genitalia from *E. tanalis* and *E. mythus* in lacking a tooth-shaped ostium, from *E. cornus*, *E. saltalis* and *E. ocellus* in having signa unequal in size, from *E. californicalis*, *E. galapagosalis*, *E. limaellus* and *E. geminus* in having the ostium simple, with two hook-like projections.

External characters male, female (fig. 23). – Wingspan 16-20 mm. Frons produced forward with clear sharp point, creamy white to light brown, no ventral ridge; vertex creamy white to light brown; labial palp two, sides creamy white at base, becoming light brown to brown, creamy white from above and below; maxillary palp creamy white to light brown; antenna creamy white. Thorax creamy white to light

brown; patagia creamy white; tegulae creamy white to light brown, evenly mottled. Forewing, groundcolour creamy white densely suffused with ochreous to dark brown scales; medial fascia double, gently arched to nearly straight, running to one-fifth to one-fourth of the dorsum; subterminal line ochreous brown, about midway between terminal dots and termination of posterior area; area adjacent to terminal dots white; eight, sometimes nine black terminal dots, formula 2-2-3-1 or 2-2-3-2; fringes shiny, creamy white with one to two brown lines. Hindwing creamy white to light brown, subterminal fascia absent, termen darkly bordered; fringes white with sometimes inconspicuous brownish line.

Tergite VIII (fig. 24). – Sclerite normally sclerotized, posterior part small, rounded, stalk long, anterior part narrow, faint.

Male genitalia (fig. 110). – Uncus normal, slightly bent, tapering to pointed tip; gnathos longer, two dorsal thorns, terminal part long; tegumen without appendix angularis; sacculus narrow, processus of sacculus absent, processus basalis large, broad, dorsal edge minutely dentate, outer corner with bent spine, two processi inferiores valvae, cucullus very broad, dorsal edge dentate; juxta small, triangular with two small dorsal projections; vinculum long; aedeagus slender, three groups of cornuti, one group consisting of a double row.

Female genitalia (fig. 161). – Papillae anales normal; membrane of tergite VIII with one, half-circular sclerotization, edges of tergite VIII connected, anterior edge waved; ostium simple, two hook-like projections, minutely dentate; ductus bursae long heavily sclerotized, armed with many cornuti in upper half; ductus seminalis narrow; bursa copulatrix roundish, signa unequal in size.

Biology. – Unknown. Specimens caught in March and December.

Distribution (fig. 25). – Brazil.

Etymology. – *Minutus* (Latin) refers to the minute dorsal dentation of the processus basalis.

### 14. *Euchromius saltalis* Capps, 1966

(figs. 25-27, 111, 162)

*Euchromius saltalis* Capps, 1966: 6. Holotype: ♂, 'Salta Argentina', GS 12,110 (USNM) [examined].

Material. – 14 ♂, 13 ♀. Argentine: Alumine, 1 ♂ (ZMUC); Arroyito, 1 ♂ (RTAS), 7 ♂, 10 ♀ (ZMUC); Chos Malal, 1 ♀ (RTAS), 1 ♂, 1 ♀ (ZMUC); Salta, 2 ♂, 1 ♀ (BMNH), 1 ♂ (USNM); Tucuman, 2 ♂ (ZMUN).

Diagnosis. – Externally almost indistinguishable from species with a double medial fascia and frons with one point. Differs in male genitalia from all species in having a group of lateral cornuti posterior of



the anellus connection. Differs in female genitalia from *E. minutus*, *E. geminus*, *E. californicalis*, *E. limaellus*, *E. ocellus*, *E. cornus*, *E. mythus* and *E. tanalis* in having the edges of tergite VIII connected in combination with signa equal in size.

External characters male, female (fig. 26). – 18–24 mm. Frons produced forward, with clear point, creamy white, no ventral ridge; vertex creamy white; labial palp two, sides creamy white to light brown, creamy white to light brown from above and below; maxillary palp light brown, terminal part lighter; antenna creamy white, from about halfway in conspicuous darkly ringed. Thorax light brown; patagia creamy white to light brown; tegulae creamy white to light brown, evenly mottled. Forewing, groundcolour creamy white densely suffused with ochreous to brown scales; medial fascia double, gently arched to straight, running to one-fifth of the dorsum; subterminal line ochreous brown, about midway between terminal dots and termination of posterior area; area adjacent to terminal dots white; nine or eight black terminal dots, formula 2-2-3-2 or 2-2-3-1; fringes shiny with two ochreous brown lines. Hindwing creamy white, subterminal fascia absent, termen darkly bordered; fringes white with creamy white line.

Tergite VIII (fig. 27). – Sclerite normally sclerotized, posterior part rectangular, stalk narrow, anterior part faint.

Male genitalia (fig. 111). – Uncus normal, slightly bent, tapering to pointed tip; gnathos longer, two dorsal thorns, terminal part long; tegumen without appendix angularis; sacculus narrow, processus of sacculus absent, processus basalis broad rectangular, dorsal edge smooth to very fine dentate, outer corner provided with inwardly bent small spine, two processi inferiores valvae, cucullus very broad, dorsal edge minutely dentate; juxta normal sized, triangular; vinculum long; aedeagus long, armed with group of large lateral cornuti posterior of anellus connection (these may be lost due to copulation, the holotype only has two lateral cornuti left), a double row of large cornuti and two groups of small cornuti.

Female genitalia (fig. 162). – Papillae anales normal; membrane of tergite VIII with very inconspicuous band-shaped sclerotization, edges of tergite VIII connected, forming a rectangular patch above the ostium; ostium simple, lateral with hook-shaped projections, projections minutely dentate; ductus bursae long, very strongly sclerotized with many cornuti in upper half; ductus seminalis narrow; bursa copulatrix oblong with two long equal-sized signa.

Biology. – Unknown. Caught in March, November and December from 850 m (Chos Malal) up to 2500 m (Salta) altitude.

Distribution (fig. 25). – Argentina.

## 15. *Euchromius ocellus* (Haworth, 1811)

(figs. 25, 28–31, 112, 163)

*Palparia ocella* Haworth, 1811: 486. Holotype: ♂, [United Kingdom] 'ocella', GS 17541 (BMNH) [examined].

*Crambus cyrilli* Costa, 1829: 11 [type material presumably lost].

*Phycis funiculella* Treitschke, 1832: 200 [type material lost].

*Eromene texana* Robinson, 1870: 155 [type material presumably lost].

*Eromene gigantea* Turati, 1924: 63. Lectotype ♀ (here designated): 'Cyrenaica Bengasi 2.III.22 Geo. C. Kruger', GS 17540 (BMNH) [examined].

*Pseudoancylolomia qadrii* Ahmad, Zaidi & Kamaluddin, 1982: 15. Holotype: ♂, 'Kala Shan Kaku, on light'. (ESKK) [examined]. Syn. n.

*Euchromius ocellus* (Haworth, 1811). Schouten (1988: 38) [redescription].

Material. – 1955 ♂, 1733 ♀.

Diagnosis. – Difficult to separate from other species with a double medial fascia and a pointed frons. Differs from these species in male genitalia by the very broad cucullus, the dorsal edge being finely dentate in basal half in combination with processus basalis large, broad, provided with strong dorsally bent spine, arising from middle of blade and the aedeagus with three groups of cornuti, one of which consists of a double row. Differs in female genitalia in having a small mushroom or lipshaped ostium in combination with the edges of tergite VIII separate and smooth and signa of equal length.

Biology. – *E. ocellus* has been found in various habitats, viz. cultivated areas, macchia in the Mediterranean, dry savanna in Africa, salt-steppe in the Middle East and salt-areas in North-America. It lives from sea level up to high altitudes, viz. up to 3100 m in the La Sal Mountains in Utah, at 1700 m in the Greater Atlas, at 2600 m in Iran and 4200 m in Afghanistan and at 2300 m in the north-eastern part of Burma.

The larvae has been described by Hinton (1943: 202) from a single larva. It is said to be found on stored food-products and owes its wide distribution to human transportation with these products. Since Hinton only had a single larva, it is not certain that it was *E. ocellus*, or it may have been accidental that it was found associated with stored food-products. I agree with Hinton on the assumption that the wide distribution of *E. ocellus* is, at least partly, very likely caused by human transportation. Lhomme (1935–1946) gives dead and decaying leaves, etc. as the food-source, Capps (1966) states that the larvae live on the roots of corn and Milo maize (*Sorghum*). It seems very plausible that *ocellus*, as larvae or pupae, is transported with remains of plants and is not to be regarded as a pest. It is also certainly migratory since several spec-

imens have been caught at sea as far as 50 miles out of the coast.

Distribution (figs. 25, 28-31). – Africa: Ethiopia, Somalia, Kenya, Tanzania, Central African Republic, Zaire, Uganda, Malawi, Seychelles, Madagascar, Mozambique, Zimbabwe, South Africa, Botswana, Namibia, Angola, Equatorial Guinea, Nigeria, Niger, Bourkina Fasso, Ghana, Senegal, Morocco, Algeria, Tunisia, Libya, Egypt, Sudan. – Europe: Portugal, Spain, France, Great Britain, Belgium, The Netherlands, Denmark, Norway, Sweden, Finland, Italy, Yugoslavia, Greece, Rumania, Bulgaria. – West and Central Asia: Ukraine (Krim). – Near and Middle East: Turkey, Israel, Jordan, Iraq, Saudi Arabia, Yemen, Oman, Kuwait, Iran, Afghanistan, Georgia, Turkmeniya, Tadzhikistan, Kirgiziya. – Southern Asia: Pakistan, India, Nepal, Burma. – Pacific: Hawaii. – Central and South America: Mexico, Panama, Surinam, Netherlands Antilles. – USA: California, Oregon, Washington, Nevada, Utah, Arizona, New Mexico, Kansas, Colorado, Texas, Oklahoma, Florida and Pennsylvania.

Remarks. – Ahmad et al. (1982: 15) published the new species and genus *Pseudoancylolomia qadrii*. Together with the description they figure the male genitalia and wing-venation. Since Ahmad et al. were clearly unaware of the existence of the genus *Euchromius* and all the species belonging to it, they make no reference as how to distinguish *P. qadrii* from *Euchromius* ssp. The characters in which *qadrii* differs from other species are therefore to be found under the genus description. Arguments to synonymize the genus *Pseudoancylolomia* with *Euchromius* have been summarized before, while *P. qadrii* is evidently a synonym of *E. ocellus* (Haworth, 1811).

## 16. *Euchromius pulverosus* (Christoph, 1887) (figs. 32-34, 114, 165)

*Eromene pulverosus* Christoph in Romanoff 1887: 47. Lectotype ♀ (designated by Bleszynski (1965a: 82)), 'Ordubad', GS 9538 (ZMAS) [examined].

*Eromene cochlearella* Amsel, 1949: 231. Holotype: ♂, 'Iran, Elbursgebirge Keredj 1936 Leg. Brandt', GS 317 (LNKD) [examined]. Syn. n.

Material. – 13 ♂, 14 ♀. Armenia: Ordubad, 1 ♀ (ZMAS). Iran: Demavend, 1 ♂ (INER); Derbend, 1 ♂ (BMNH); Keredj, 2 ♀ (BMNH), 1 ♂ (LNKD); Nesa, 1 ♀ (NHRS). Iraq: Rayat, 1 ♂ (BMNH). Lebanon: Bcharre, 2 ♂ (NHMW), 2 ♂ (ZSMC); Beyrouth, 1 ♂ (MHNH). Turkey: Aksehir, 1 ♂, 1 ♀ (ZSMC); Amanus, 1 ♂ (ZSMC); Artvin, 2 ♀ (LUCA); Ergani, 1 ♂, 2 ♀ (MHNG); Kagizman, 1 ♀ (ZMUC); Malatya, 1 ♀ (BMNH); Marash, 1 ♀ (INER), 1 ♀ (NHMW), 1 ♂, 1 ♀ (ZSMC).

Diagnosis. – Externally indistinguishable from *E.*

*zagulajevi* and *E. confusus*, but can be distinguished from all other species by the eight terminal black dots, regulae evenly mottled, fringes of the forewing without brown lines and a single medial fascia. Differs in male genitalia from *E. confusus* in having the stalk of the gnathos terminally connected to basal part. Basal part of gnathos and stalk without clear angle. Differs in female genitalia from *E. confusus* in having the projection of the ostium with convex sides. The projection of the ostium lacks in *E. zagulajevi*.

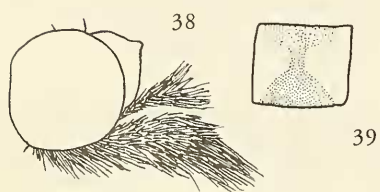
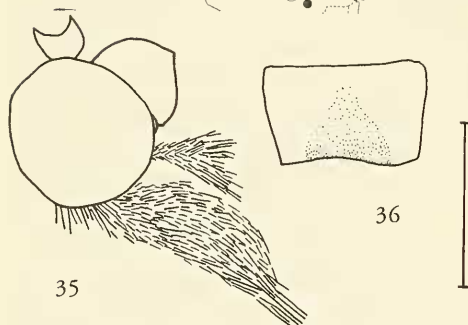
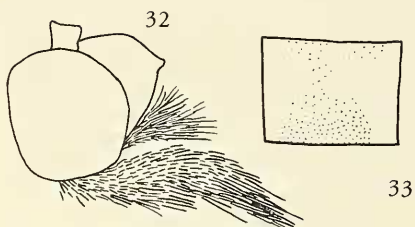
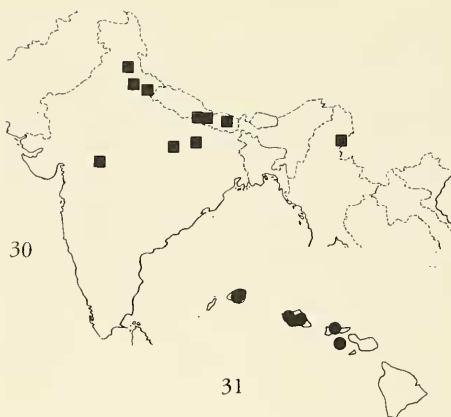
External characters male, female (fig. 32). – Wingspan 20-23 mm. Frons produced forward, with point, creamy white, no ventral ridge; vertex creamy white; labial palp two, sides creamy white at base, becoming brown, creamy white from above and below; maxillary palp brown, terminal part creamy white; antenna creamy white to grey brown. Thorax light to dark brown; patagia creamy white with two broad longitudinal brown stripes; tegulae creamy white to brown, evenly mottled. Forewing, groundcolour creamy white, densely suffused with ochreous to dark brown scales; medial fascia single, slightly arched, running to one-third of the dorsum; subterminal line brown, about midway between terminal dots and termination of posterior area; area adjacent to terminal dots white; eight black terminal dots, formula 2-2-3-1; fringes creamy white at base then evenly grey-brown. Hindwing grey-brown, subterminal fascia absent, termen darkly bordered; fringes creamy white with brownish line.

Tergite VIII (fig. 33). – Sclerite normally sclerotized, posterior part triangular, stalk short broad, anterior part faint.

Male genitalia (fig. 114). – Uncus normal, tapering to pointed tip; gnathos longer, at base with several dorso-lateral spines, dorsal thorns absent, terminal part short swollen; tegumen without appendix angularis; sacculus broad, processus of sacculus not reaching end of cucullus, tip slightly bent upward, strongly sclerotized, processus basalis stout, nearly straight, processus inferior valvae small, elongated, cucullus normal sized, bent upward; juxta triangular; vinculum normal; aedeagus long, slender one small row of cornuti.

Female genitalia (fig. 165). – Papillae anales normal; membrane of tergite VIII with broad tie-like sclerotization armed with node-like central projection, edges of tergite VIII connected; ostium complex with rounded finger-like projection, no parallel sides; ductus bursae long, slightly grooved in upper part; ductus seminalis narrow; bursa copulatrix oblong, no signa.

Biology. – Largely unknown. One long generation, starting in May ending in first half of September. Most abundant in May and June. This species has been caught up to 2100 m.





Distribution (fig. 34). – Found in Turkey, Iran, Iraq, Armenia and Lebanon.

Remarks. – There has been much confusion about the identity of this species. *E. pulverosus* (Christoph, 1887) was originally described from female material only. Amsel (1949: 234) mentioned a male which he found somewhat different from *E. pulverosus*, which he conditionally named 'cochlearella'. Bleszynski & Collins (1962: 305) first used the name *Euchromius cochlearellus* (Amsel, 1949). Bleszynski (1965a) recorded five male specimens not conspecific with the male of *E. cochlearellus* (Amsel, 1949), which he regarded the male of *E. pulverosus*. He also found two females, difficult to separate from the females of *E. pulverosus*, which he regarded the females of *E. cochlearellus*.

It appeared, however, that the males and females of the two species had been mixed up by Bleszynski. Due to the rearranging of the males and females, *E. cochlearellus* has become a junior synonym of *E. pulverosus*, leaving the other species without a name. The name for the latter is *Euchromius confusus*.

#### 17. *Euchromius confusus* sp. n. (figs. 34-36, 113, 164)

*Euchromius cochlearellus* auct., nec Amsel [misidentification].

Type material. – Holotype: ♀, '1-9.8.1962 Afghanistan. Paghman 30 km NW v. Kabul, 2100m E. & A. Vartian leg.', GS 17758 (BMNH). Paratypes: 2 ♂, '20.u.28.VI.1965 Afghanistan Paghman, 30 km NW v. Kabul, 2500m Kasy & Vartian', (NHMW). 1 ♀, '20.-30.7.1962 Afghanistan Paghman, 30 km NW v. Kabul, 2100m E. & A. Vartian leg.', (NHMW). 1 ♀, same data as holotype, (NHMW). 1 ♀, 'J. Klapperich Ghorbandtal 1900m 26.8.52 O-Afghanistan', (BMNH). 1 ♂, 1 ♀, same data as previous, (RTAS) respectively (LNKD). 3 ♂, Kondara Tadzhikistan Gissar-range 21.VII 946, (BMNH). 1 ♂, O-Afghanistan Gulbahar 1700m 2-9, (LNKD). 1 ♀, Zeitun, (BMNH). 2 ♀, 'Iran Taug-Ab nr. Firuzabad Fars 4000ft 6-IV-50 FF19 E.P. Wiltshire', GS 17761 (BMNH). 1 ♂, no locality label, GS 16600 (BMNH). 1 ♂, no locality label, (BMNH). 1 ♂, 1 ♀, Tadzhikistan Gissar 27.v.1985, (ZMAS).

Diagnosis. – Externally indistinguishable from *E. zagulajevi* and *E. pulverosus*, but can be distinguished from all other species by the eight terminal black dots,

regulae evenly mottled, fringes of the forewing without brown lines and a single medial fascia. Differs in male genitalia from *E. pulverosus* in having the stalk of the gnathos not terminally connected to basal part. Basal part of gnathos and stalk connected at right angle. Differs in female genitalia from *E. pulverosus* in having the projection of the ostium parallel-sided. The projection of the ostium lacks in *E. zagulajevi*.

External characters male, female (fig. 35). – Wingspan 20-23 mm. Frons produced forward, with point, creamy white to brown, no ventral ridge; vertex creamy white to brown; labial palp two, sides creamy white at base, soon becoming brown, creamy white from above and below; maxillary palp brown, terminal part creamy white; antenna grey to grey-brown. Thorax light to dark brown; patagia creamy white with two broad longitudinal light to dark brown stripes; regulae light to dark brown, evenly mottled. Forewing, groundcolour creamy white densely suffused with ochreous to dark brown scales; medial fascia single, slightly bent, running to one-third of the dorsum; subterminal line brown, about midway between terminal dots and termination of posterior area; area adjacent to terminal dots white; eight black terminal dots, formula 2-2-3-1; fringes creamy white at base then evenly grey-brown. Hindwing grey-brown, subterminal fascia absent, termen darkly bordered; fringes creamy white with brownish line.

Tergite VIII (fig. 36). – Sclerite normally sclerotized, posterior part triangular, stalk and anterior pattern not visible.

Male genitalia (fig. 113). – Uncus normal, bent; gnathos longer, basal part enlarged, basal edge dentate with strong spines, terminal part short, connected at right angle to stalk; sacculus normal, processus of sacculus reaching up to half of cucullus, bent upward, strongly sclerotized, processus basalis long, slightly bent inward, dorsal edge inconspicuous roughly dentate in posterior part, processus inferior valvae elongated, cucullus long, slender, slightly constricted about halfway; juxta slightly triangular; vinculum normal sized; aedeagus normal sized, one small clear row of cornuti, posterior a second faint group of cornuti.

Female genitalia (fig. 164). – Papillae anales normal; membrane of tergite VIII with tie-like sclerotiza-

Figs. 28-40. *Euchromius* species. – 28, distribution of *E. ocellus*, European and North African distribution (distribution in Mauritania, Mali, Niger, Tchad, the Central African Republic, Ethiopia and all other countries south of these are not depicted, but see Schouten 1988); 29, distribution of *E. ocellus* in North America; 30, distribution of *E. ocellus* in the Oriental region; 31, distribution of *E. ocellus* in Hawaii; 32, *E. pulverosus*, head, lateral aspect, scales removed; 33, idem, sclerite of tergite VIII; 34, distribution of *E. confusus* and *E. pulverosus*; 35, *E. confusus*, head, lateral aspect, scales removed; 36, idem, sclerite of tergite VIII; 37, distribution of *E. vinculellus* (distribution in Niger and Kenya are omitted); 38, *E. anapiellus*, head, lateral aspect, scales removed; 39, idem, sclerite of tergite VIII; 40, distribution of *E. anapiellus*. Scale bar 0.5 mm to figs. 32, 35-36, 38-39.

tion, armed with small central projection, edges of tergite VIII connected; ostium complex, large tooth-shaped projection with parallel sides; ductus bursae long, minutely grooved in upper part; ductus seminalis narrow; bursa copulatrix oblong, no signa.

Biology. — Unknown. Collections from April, May, June, July, August and September. Most specimens in July and August, up to 2500 m altitude.

Distribution (fig. 34). — A Central-Asian species, found in Tadzhikistan, Afghanistan and Iran.

Remarks. — See under *E. pulverosus*.

### 18. *Euchromius vinculellus* (Zeller, 1847)

(figs. 9, 37, 115-117, 166)

*Crambus vinculellus* Zeller, 1847: 760. Neotype: ♂ (designated by Bleszynski (1960: 211)), GS 628 (ZMNB) [not examined].

*Ommatopteryx corsicalis* Hampson, 1919: 534. Holotype: ♂, 'Vizzavona Corsica 11.VI.1899 Wlsm 1910. 166', GS 5647 (BMNH) [examined].

*Ommatopteryx asbenicola* Rothschild, 1920: 220. Holotype: ♀, 'Auderas, Asben 26 July 20 (A. Buchanan)', GS 5675 (BMNH) [examined].

*Eromene joiceyella* Schmidt, 1934: 538. Holotype: ♂, '42.27. Timmel S.E. Slopes Great Atlas Morocco 20.V.27 at light Talbot & Le Cerf. (BMNH) [examined].

*Eromene bahrlutella* Amsel, 1949: 236. Lectotype: ♂ (designated by Bleszynski (1965a: 82)), 'Sudende des Toten Meeres 15.-27.3.33 Aigner leg. H. Amsel', GS 320 (LNKD) [examined].

*Euchromius vinculellus* (Zeller, 1847) Schouten (1988: 26) [redescription].

Material. — 57 ♂, 67 ♀. Afghanistan: Sarobi, 2 ♂, 2 ♀ (LNKD). Algeria: 70 km NE of Tamanrasset, 1 ♀ (BMNH); El Kantara, 1 ♂, 1 ♀ (BMNH); Hammam-Meskoutine, 1 ♂ (BMNH); Lambese, 1 ♀ (BMNH); Marsa-ben-Mehidi, 1 ♂ (BMNH); Sebdu, 2 ♂ (BMNH); Sidi-bel-Abbes, 1 ♀ (BMNH). Cyprus: Ayios Ioannis, 1 ♀ (NHMW); Limasol, 1 ♀ (NHMW). France: Ajaccio, 1 ♀ (NHMW); Vizzavona, 1 ♂ (BMNH). Georgia: Lagodekhi, 1 ♀ (ZMAS). Iran: 11 km NE of Kavevand, 1 ♂, 1 ♀ (LNKD); 22 km N of Bandar-Abbas, 3 ♂ (NHMW); 52 km S of Sirjan, 1 ♂, 1 ♀ (NHMW); Ahwas, 1 ♂ (BMNH); Bender Abbas-Sardabad, 1 ♂, 1 ♀ (NHRS); Bender Chahbahar, 1 ♀ (LNKD); 1 ♂ (NHRS); Bender Chahbahar-Iranshar, 1 ♀ (LNKD); Firozabad, 1 ♂ (BMNH); Kazeroun-Bouchir, 1 ♀ (NHRS); Keredj, 1 ♀ (NHRS). Israel: Jericho, 1 ♂ (LNKD), 1 ♀ (NHMW); South end of Dead Sea, 1 ♂, 1 ♀ (LNKD). Italy: Arcu Neridu, 1 ♂ (LNKD); Buccherti, 1 ♂ (RTAS); Can Guttur Mannu, 1 ♀ (LNKD); Musei, 1 ♂ (LNKD); Partenico, 1 ♀ (INER); Porto Santoru, 1 ♀ (INER); Putifigari, 1 ♂, 1 ♀ (IZUI); Sinicola, 1 ♂ (LNKD); Teulada, 1 ♀ (LNKD). Jordan: Amman, 2 ♀ (ZFMK); Zarqa, 2 ♀ (LNKD). Kenya: South Horr, 1 ♀ (LACM). Morocco: 15 km SW of Tazenakht, 1 ♀ (ZMUC); Barrage Cavagnac, 1 ♀ (MHNG); Chechaouen, 2 ♀ (NHMW), 1 ♂ (ZFMK); Demnate, 1 ♀ (BMNH); Goundafa, 1 ♀ (BMNH), 4 ♀ (NHMW); Ijoukak, 1 ♀ (MNHN); Ljourar, 1 ♀ (BMNH); Ketama, 1 ♀ (LNKD), 1 ♂ (MNMS); Quirgane, 1 ♂ (LNKD), 1 ♂, 1 ♀ (ZFMK); Tangier, 1 ♀ (MNMS); Taroudant,

1 ♂ (MNHN); Timmel, 1 ♂ (BMNH), 1 ♂ (MNHN); Tinerhir, 1 ♀ (ZMUC); Zemmouro, 1 ♀ (BMNH). Niger: Aouderas, 1 ♀ (BMNH). Nikhichevan: Ordubad, 1 ♀ (ZMAS). Oman: Ghubra, 1 ♀ (BMNH); Misfah, 1 ♂ (BMNH); Muscat, 1 ♂, 1 ♀ (BMNH); Wadi al Khawb, 1 ♀ (BMNH); Wadi Bani Khalid, 2 ♂, 1 ♀ (BMNH); Wadi Fanjah, 1 ♀ (BMNH). Saudi Arabia: Buraiman, 1 ♀ (BMNH); Makakah, 1 ♀ (NHMB); Sadiyah, 5 ♂, 5 ♀ (NHMB); Wadi Majarish, 2 ♂ (NHMB). Spain: Altea, 1 ♀ (ZFMK); El Rompido, 1 ♀ (LNKD); Nerva, 2 ♀ (HULL); Periane, 1 ♀ (GIEL), 1 ♂, 2 ♀ (HULL); Ronquilla, 1 ♂ (DERR), 3 ♂ (GIEL), 1 ♂ (HULL), 5 ♂ (RTAS); San Pablo, 1 ♂ (GIEL). Tunisia: 25 km SE of Ain Draham, 1 ♂ (ZMUC); Bou-Hedma, 1 ♂ (INER). Turkey: Malatya, 1 ♂ (BMNH). Yemen Arabic Republic: Suq as Sabi, 1 ♀ (RTAS).

Diagnosis. — Differs from all other species by its straight single medial fascia in combination with six or seven black terminal dots and having a yellow area adjacent to the black terminal dots.

Biology. — Largely unknown. Flight-periods can be split into three parts. Firstly south of the Mediterranean Sea (Morocco, Algeria and Tunisia), where this species has two generations and was caught from March to September, with peaks in May-June and August-September. Secondly the area north of the Mediterranean Sea (Spain, France and Italy), where there are two more or less continuous generations from April to October with peaks in May and August-September. Thirdly, east of the Mediterranean where specimens have been caught all year round, with peaks in March-April-May and September-October. Highest recorded altitude 1400 m in Morocco.

Distribution (fig. 37). — Spain, France, Italy, Cyprus, Turkey, Georgia, Afghanistan, Iran, Oman, Saudi Arabia, Jordan, Israel, Yemen Arabic Republic, Kenya, Niger, Tunisia, Algeria and Morocco.

Remarks. — Bleszynski (1965a: 81) and Schouten (1988: 26) incorrectly state the male with GS 628 Bl. as the lectotype; this should read 'neotype'.

### 19. *Euchromius anapiellus* (Zeller, 1847)

(figs. 38-40, 122, 171)

*Crambus anapiellus* Zeller, 1847: 757. Lectotype: ♀ (designated by Bleszynski (1960: 211)), 'Syracus Zell. coll. 1884', GS 5655 (BMNH) [examined].

*Eromene bellus* var. *minorella* Chrétien: in Lhomme (1935-1946: 84) [unavailable, manuscript name of Chrétien, specimens in Paris Museum under *minorella* belong to *E. anapiellus*].

Material. — 50 ♂, 57 ♀. Algeria: Bone, 1 ♂, 1 ♀ (MNHN); Djebel-Aurès, 1 ♂ (BMNH); Guelit, 1 ♀ (MNHN); Hamman R'irha, 2 ♂, 1 ♀ (BMNH); Lambese, 4 ♂, 1 ♀ (BMNH), 1 ♂ (NHMB); St. Charles, 2 ♂ (MNHN); Qued Hamidou, 1 ♂ (BMNH); Tarfaia, 1 ♀ (MNHN). France: Anduse, 1 ♀ (MNHN); Bize, 4 ♂, 4 ♀ (MNHN); Bonnicieux, 1 ♀ (RTAS), 1 ♀ (WOLF); Durban-Sigean, 2 ♀ (ZMUC); Feu-



du-Var, 1 ♂ (ROBI); La Penne-s-L'Ouvèze, 1 ♂, 2 ♀ (RTAS), 4 ♀ (WOLF); Le Mans, 1 ♂ (MHNG); Les Carbonnes de Fleurs, 5 km N. of Narbonne, 1 ♀ (HUIS); Nîmes, 1 ♂ (MNHN); Pouzols, 1 ♂ (HUIS); Saïgnon, 1 ♀ (ROBI); Ste Croix, 1 ♂ (MNHN); Ste Guilhem, 1 ♀ (MNHN). Italy: Casel Daccia, 1 ♂ (INER); Sicilia, 1 ♀ (MCZC), 1 ♂, 1 ♀ (NHMW); Syracus, 2 ♂, 6 ♀ (BMNH), 1 ♀ (LNKD), 4 ♂, 1 ♀ (NHMB), 7 ♂, 5 ♀ (NHMW), 1 ♂, 1 ♀ (NHRS), 1 ♂, 1 ♀ (ZFMK), 1 ♀ (ZSMC); Zappulla, 1 ♂ (NHMW). Morocco: Azzou, 1 ♂ (BMNH); Meknes, 1 ♂ (BMNH); Rabat, 1 ♂ (BMNH); Sebou, 1 ♂ (BMNH); Tangier, 3 ♂, 8 ♀ (BMNH), 1 ♂, 1 ♀ (ZFMK). Spain: Jaca, 3 ♀ (BMNH); Korb, 1 ♀ (BMNH); San Antonia, 1 ♂ (NHRS); San Roque, 1 ♀ (HULL); Tirade, 1 ♀ (HULL). Tunisia: Ain Draham, 3 ♀ (BMNH); El Gounia 1 ♂ (ZSMC); Sfax, 1 ♀ (BMNH).

**Diagnosis.** – Similar to *E. bellus*, but can be distinguished by the narrow yellow area adjacent to terminal dots, which is broad and white in *E. bellus*. The male of *E. anapiellus* differs from *E. bellus* in having a cornutus which is curved less than 180° (figs. 122, 123). Differs in female genitalia from *E. bellus* in having the sclerotization in ostium two times as long as broad, three times as long as broad in *E. bellus* (figs. 171, 172).

**External characters** male, female (fig. 38). – Wingspan 13-17 mm. Frons produced forward, with point, creamy white, no ventral ridge; vertex creamy white; labial palp two, sides white at base, becoming brown, creamy white from above and below; maxillary palp creamy white, brown ringed at base of last segment, terminal part creamy white; antenna creamy white to light grey, from about the middle inconspicuously darkly ringed. Thorax creamy white; patagia creamy white with two broad longitudinal light brown stripes; tegulae creamy white with dark patch in the middle. Forewing, groundcolour white densely suffused with ochreous to dark brown scales; medial fascia double, inner one usually reduced, outer fascia straight, running to one-third of the dorsum; subterminal line ochreous to dark brown, about midway between terminal dots and termination of posterior area; area adjacent to terminal dots narrow, yellow; nine or eight black terminal dots, formula 2-2-3-2 or 2-2-3-1; fringes shiny, evenly grey-brown. Hindwing light brown to dark grey, subterminal fascia present, termen darkly bordered; fringes creamy white with brownish line.

**Tergite VIII** (fig. 39). – Sclerite normally sclerotized, posterior part slightly larger than anterior part, stalk stout.

**Male genitalia** (fig. 122). – Uncus normal, tapering to sharp pointed tip; gnathos longer, with two dorsal thorns, terminal part long; tegumen without appendix angularis; sacculus swollen, swollen, partly armed with thin elongated crest, processus of sacculus short, blunt, dorsal processus of sacculus pointed, processus basalis broad at base, tapering soon, bent inward, ven-

tral terminal part minutely dentate, processus inferior valvae at base of processus basalis, small, cucullus broad, slightly bent upward at tip; juxta broad triangular; vinculum rectangular; aedeagus small, one large pointed cornutus.

**Female genitalia** (fig. 171). – Papillae anales normal; membrane of tergite VIII without clear sclerotizations; edges of tergite VIII not connected; ostium simple, somewhat pointed, sclerotization two times as long as broad, ductus bursae posterior part broad; ductus seminalis narrow; bursa copulatrix elongated, signa absent.

**Biology.** – Unknown. Flies after sunset (Zeller 1847). One generation, the first specimens were caught in the first half of May. It continues through June, July, August to the end of September.

**Distribution** (fig. 40). – A West-Mediterranean species, occurring in Spain, France, Italy, Tunisia, Algeria and Morocco.

**Remarks.** – Roesler (1983: 12) records Sardinia. Records from Portugal (Mendes D'Azevedo 1904-1905: 226, Vieilledent 1905: 201, Zerkowitz 1946: 145) and Egypt and Asia Minor (Bleszynski 1965a: 69) seem to be based on misidentified material. Material under *E. anapiellus* in MZCP from Portugal turned out to belong to *E. gozmanyi*.

## 20. *Euchromius bellus* (Hübner, 1796) (figs. 9, 41-43, 123, 172)

*Tinea bella* Hübner, 1796: 29. Syntypes: 'Hungary' [lost].

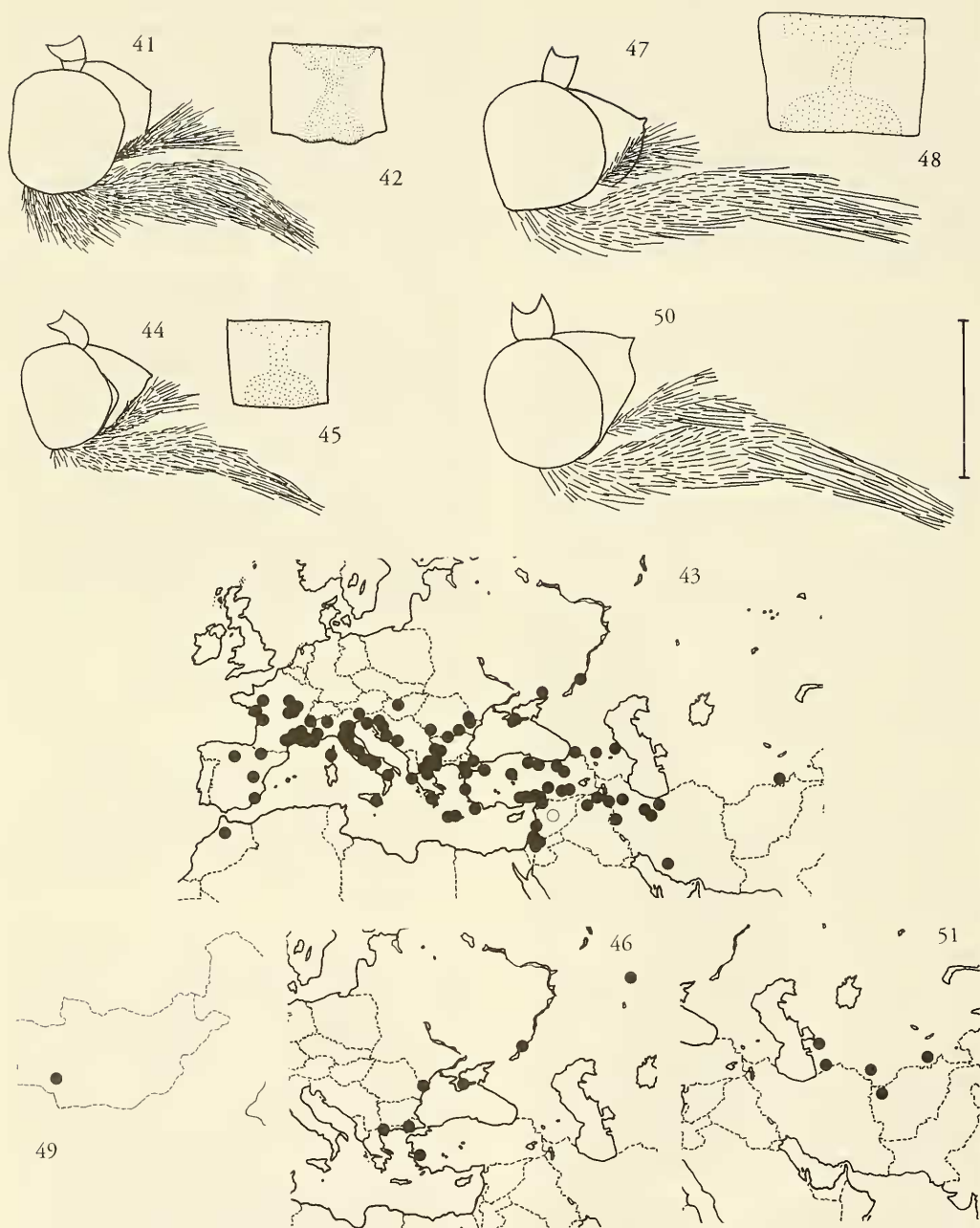
*Eromene bellalis* Hübner, [1825]: 366 [lapsus calami].

*Euchromius bellus* (Hübner, 1796); Guenée 1845: 324.

*Ommatopteryx bellus* (Hübner, 1796); Kirby 1897: 274.

*Ommatopteryx bellus* var. *minorella* Chrétien in Lhomme (1935-1946: 84) [name unavailable, manuscript name of Chrétien, incorrect identification, the specimens belong to *E. anapiellus*].

**Material.** – 253 ♂, 215 ♀. Armenia, 1 ♂, 1 ♀ (ICCM). Bulgaria: Bunkera, 1 ♂ (RTAS); Ichtyman, 1 ♂ (NHMW); Kozuch, 2 ♀ (RTAS); Sistova, 2 ♂ (INER), 1 ♂ (SMTD), 9 ♂, 7 ♀ (ZSMC). France: Abries, 1 ♂ (MNHN); Aizenay, 1 ♀ (MNHN); Allauch La Clu, 1 ♀ (MNHN); Autun, 1 ♂, 1 ♀ (MNHN); Berre, 1 ♂, 1 ♀ (MNHN); Borgo, 1 ♀ (MNHN); Camargue, 1 ♀ (LNKD); Cannes, 1 ♂, 1 ♀ (BMNH); Chatebaillon, 1 ♂ (MNHN); Col de Homme Mort, 1 ♂ (ROBI); Corse, 1 ♀ (MNHN); Cravant, 2 ♀ (MNHN); Decoster, 1 ♀ (MNHN); Lantosque, 1 ♂ (MNHN); Digne, 1 ♂ (BMNH), 2 ♂ (INER), 1 ♀ (LNKD), 5 ♂, 5 ♀ (MNHN); Entrevaux, 2 ♂, 1 ♀ (BMNH); Florae, 1 ♀ (MNHN); Foret St. Baume, 9 ♂, 2 ♀ (WOLF), 1 ♂ (RTAS); Gemenos, 1 ♂ (WOLF); La Banne, 1 ♂, 1 ♀ (MNHN); La Baume, 1 ♂, 2 ♀ (ANSP); La Voulté sur Rhone, 6 ♂ (MNHN); Le Mans, 1 ♂, 1 ♀ (MHNG); Le Restugaud, 12 ♂, 5 ♀ (ROBI); Le Rozier, 1 ♂ (MNHN); Montpellier, 1 ♂ (MNHN); Nans, 1 ♂, 1 ♀ (ANSP); Nievre, 2 ♂, 2 ♀ (MNHN); Pelissanne, 2 ♂ (MNHN); Ste André les Alpes, 1 ♂ (MNHN); St Barnabe, 1 ♀ (MNHN); Ste-Croix, 3 ♀ (MNHN); St. Guilhem le Desert, 1 ♀ (MNHN); Vaucluse,



Figs. 41-51. *Euchromius* species. – 41, *E. bellus*, head, lateral aspect, scales removed; 42, idem, sclerite of tergite VIII; 43, idem, distribution map (open circle: exact locality not found); 44, *E. bleszynskiellus*, head, lateral aspect, scales removed; 45, idem, sclerite of tergite VIII; 46, idem, distribution map; 47, *E. bleszynskii*, head, lateral aspect, scales removed; 48, idem, sclerite of tergite VIII; 49, idem, distribution map; 50, *E. scobiolae*, head, lateral aspect, scales removed; 51, idem, distribution map. Scale bar 0.5 mm to figs. 41-42, 44-45, 47-48, 50.

2 ♀ (MNHN); Volonne, 1 ♂, 1 ♀ (NHMB). Georgia: Gonia, 1 ♀ (ZMAS); Tbilisi, 1 ♂ (ZMAS). Greece: Chalkidike, 4 ♀ (IZUI); Corfu, 1 ♂ (NHMW); Kournas, 2 ♀ (LNKD); Lithochoron, 1 ♂ (LNKD); Niki, 1 ♂ (LUCA); Lindos, 2 ♀ (RMNH); Spili, 1 ♀ (LNKD); Vrises, 1 ♂ (LNKD). Hungary: no locality, 1 ♂ (BMNH), 1 ♂ (LNKD), 1 ♂ (MCZC), 1 ♂ (MHNG), 3 ♂, 1 ♀ (NHMW), 6 ♂, 2 ♀ (RMNH), 1 ♂ (ZMUN), 2 ♂ (ZSMC); Budafok, 2 ♂ (BMNH). Iran: Keredj, 2 ♂, 1 ♀ (NHRS); Kermanshah, 2 ♂, 2 ♀ (LNKD); Persepolis, 1 ♂, 1 ♀ (LNKD); 100 km Mahabad-Sardasht, 2 ♀ (LNKD); 40 km S. of Shahabad, 1 ♀ (LNKD); 90 km S. of Teheran, 1 ♂ (LNKD); 53 km S. of Zanjan, 1 ♂ (LNKD). Iraq: Diana, 1 ♂ (BMNH); Mosul, 5 ♂, 2 ♀ (NHMW); Rowanduz, 1 ♂ (BMNH); Salahuddin, 1 ♂ (BMNH). Israel: Cesaree, 4 ♂ (MNHN); Haifa, 1 ♂ (LNKD), 1 ♀ (ZFMK); Tel Aviv, 1 ♂ (NHMW); Sedom, 1 ♂, 1 ♀ (BMNH). Italy: Albano, 1 ♀ (ZSMC); Anagui, 2 ♂, 3 ♀ (MNHN); Bologna, 4 ♂, 2 ♀ (BMNH); Brummana, 1 ♂, 3 ♀ (BMNH); Campo Basso, 1 ♂, 1 ♀ (BMNH); Fondi, 1 ♂, 1 ♀ (INER); Furbara, 5 ♂, 8 ♀ (INER); Maiella, 3 ♂, 1 ♀ (INER); Montagnana, 1 ♂ (MNSM); Monte Autore, 1 ♂ (NHMB); Monte Vernita, 1 ♂ (CASC), 1 ♀ (PRIN), 10 ♂, 9 ♀ (RTAS), 1 ♂, 1 ♀ (TMSA), 1 ♂, 1 ♀ (ZMAN); Mtgna Grande, 1 ♂, 3 ♀ (BMNH), 1 ♂ (LNKD), 14 ♂, 8 ♀ (ZSMC); Ovindoli, 1 ♂, 2 ♀ (BMNH); Orvieto, 1 ♂, 1 ♀ (INER); Prato, 1 ♂ (NHMW); Ravone, 1 ♀ (ZSMC); San Pietro, 4 ♂, 8 ♀ (MNSM); Sestola, 1 ♂, 1 ♀ (BMNH), 1 ♂ (LNKD), 1 ♀ (NHMB); Spoleto, 1 ♂, 1 ♀ (NHMB); Syracuse, 1 ♂ (NHMW); Tivoli, 3 ♂, 4 ♀ (ZSMC); Toscana, 1 ♂ (NHMB); Tradone, 1 ♂ (ZSMC). Jordan: Amman, 1 ♂ (ZFMK); Dehbeen, 1 ♀ (LNKD); Zarqa, 1 ♂ (LNKD). Lebanon: Beirut, 4 ♂, 1 ♀ (MNHN), 1 ♀ (NHMB), 1 ♂, 2 ♀ (NHMW), 1 ♂ (ZMAN). Morocco: Ifrane, 1 ♀ (LNKD). Rumania: Bucuresti, 1 ♀ (BMNH), 1 ♀ (MNHN); Mehadia, 1 ♀ (BMNH); Rimnicu Sarat, 1 ♂ (MNHN); Tecuci, 1 ♂ (BMNH). Russia: Rubas, 1 ♂ (ZMAS); Sarepta, 1 ♂, 1 ♀ (MNHN); Taganrog, 2 ♂, 2 ♀ (ZMAS). Spain: Andalusia, 1 ♂, 1 ♀ (CUIC); Burgos, 1 ♂ (MNHN); Jaca, 12 ♂, 9 ♀ (BMNH); Murcia, 1 ♂ (BMNH), 1 ♂ (NHRS); Tragacete, 1 ♂ (GIEL). Syria: no locality, 1 ♀ (BMNH), 1 ♀ (MHNG), 1 ♀ (RMNH). Tadzhikistan: Kurgan-Tjube, 1 ♂ (NHMW). Turkey: Adana, 2 ♂ (MNHN); Aksehir, 2 ♂, 1 ♀ (NHMW), 1 ♀ (ZSMC); Alexandrette, 1 ♂ (MNHN); Amassia, 1 ♂, 3 ♀ (MNHN); Ankara, 2 ♂, 1 ♀ (MHNG), 2 ♂, 1 ♀ (NHMW); Bursa, 1 ♂ (BMNH), 2 ♂, 6 ♀ (INER), 1 ♀ (NHMW); Diyarbakir, 1 ♂ (BMNH), 1 ♂, 1 ♀ (ZFMK); Gallipoli, 1 ♂, 1 ♀ (BMNH); Gümüşhane, 1 ♂ (ZMUC); 7 km W. of Horasan, 1 ♂ (LUCA); Konya, 2 ♂, 6 ♀ (LUCA); Malatya, 1 ♀ (BMNH); Marasch, 1 ♂ (BMNH), 1 ♂, 1 ♀ (INER), 1 ♂, 3 ♀ (SMTD), 1 ♂, 5 ♀ (ZSMC); Palandoken, 1 ♂ (LUCA); Pontus, 1 ♂, 1 ♀ (BMNH); Smyrna, 1 ♀ (BMNH); Tekirdech, 1 ♀ (MAES); Yenisehir, 1 ♂, 2 ♀ (MAES); Yuksek Dag, 2 ♀ (ZSMC); Zanapa, 5 ♂, 6 ♀ (MAES). Ukraine: Kara-dag, 1 ♂, 4 ♀ (ZMAS); Stevastopol, 1 ♂ (ZMAS). Yugoslavia: Drenovo, 2 ♀ (ZSMC); Gruz, 1 ♀ (NHMW); Istria, 1 ♂ (NHMW); Radobje, 1 ♂ (NHMW); Ragusa, 1 ♂, 1 ♀ (NHMW); Rovinj, 1 ♂ (LNKD); Spalato, 2 ♂ (NHMW).

Diagnosis. – Resembling *E. anapiellus* for differences see under diagnosis of that species.

External characters male, female (figs. 9, 41). – Wingspan 14-19 mm. Frons produced forward with small point or without, creamy white, usually with darker centre, no ventral ridge; vertex creamy white to light brown; labial palp two and a half, sides

creamy white at base, becoming light brown to dark grey-brown, creamy white from above and below; maxillary palp creamy white to light brown, light brown to dark grey at base of last segment; antenna creamy white, inconspicuous greyish ringed. Thorax creamy white to grey-brown; patagia creamy white with two broad longitudinal light brown to grey-brown stripes; tegulae creamy white with dark patch in the middle. Forewing, groundcolour creamy white, densely suffused with ochreous to dark brown scales, anterior area yellow to brown-grey; medial fascia double, arched to nearly straight, inner fascia reduced or not, line between double fascia white, seldom silvery, outer fascia running to one-third of the dorsum; sub-terminal line ochreous to dark brown, closer to termination of posterior area than to terminal dots; area adjacent to terminal dots broad, white; nine or eight black terminal dots, formula 2-2-3-2 or 2-2-3-1; fringes shiny, evenly greyish. Hindwing creamy white to dark grey, subterminal fascia present, termen darkly bordered; fringes creamy white with grey to brownish line.

Tergite VIII (fig. 42). – Sclerite normally sclerotized, posterior part large, rectangular, anterior part small.

Male genitalia (fig. 123). – Uncus normal, tapering to sharp pointed tip; gnathos longer, two dorsal thorns, terminal part long; tegumen without appendix angularis; sacculus swollen, processus of sacculus short, blunt, two dorsal processi, processus basalis broad at base tapering soon, bent inward, ventral terminal part minutely dentate, processus inferior valvae small, at base of processus basalis, cucullus broad, pointed tip bent upward; juxta broad triangular; vinculum normal; aedeagus large, one large curved cornutus.

Female genitalia (fig. 172). – Papillae anales normal; membrane of tergite VIII without clear sclerotizations; edges of tergite VIII not clearly connected; ostium simple, large rectangular sclerotization continued into ductus bursae, three times as long as broad, ductus bursae posterior part very broad, sac-shaped, partly wrinkled, anterior part more narrow, ductus seminalis narrow, bursa copulatrix elongated, very lightly sclerotized, signa absent.

Biology. – The single generation flies from May up to the end of August. The flight reaches its peak in July. In Israel a specimen has been caught on the 30th of March. In Italy *E. bellus* has been caught up to 1400 m, in Turkey up to 2200 m and in Iran up to 2000 m. Hogenes (pers. comm.) caught the moths in Italy at very hot and dry localities, with scarce herbal vegetation with very few grasses. The larva is mentioned to live on dry leaves of *Picris* and *Scabiosa*, also recorded to attack the roots and flower heads (Millière 1868: 219).



Distribution (fig. 43). – This species is one of the commonest of the genus. It occurs in Spain, France, Italy, Yugoslavia, Hungary, Rumania, Bulgaria, Greece, Turkey, Russia, Ukraine (Krim), Georgia, Tadzhikistan, Iraq, Iran, Syria, Jordan, Lebanon, Israel and Morocco. Bleszynski (1965A: 69) also records Czechoslovakia.

Remarks. – Butler (1882: 42) mentions *E. bellus* from Honolulu. This reference refers to *E. ocellus*.

## 21. *Euchromius bleszynskiellus* Popescu-Gorj, 1964 (figs. 44-46, 124, 173)

*Euchromius bleszynskiellus* Popescu-Gorj, 1964: 13. Holotype: ♀, 'Periprava, pad. Letea, 29.VII.1963, leg. Dr. A. Popescu-Gorj', GS 12.331/637 (MGAB) [not examined]. Bleszynski (1969: 25) [synonymization of *roxanus*].

*Euchromius roxanus* Bleszynski, 1965a: 73. Holotype: ♂, 'Guberli', GS 9432 (ZMAS) [examined].

Material. – 6 ♂, 11 ♀. Rumania: Periprava, 1 ♀ (LNKD); Sulina, 1 ♀ (BMNH), 1 ♂ (RMNH). Russia: Guberli, 1 ♂ (ZMAS); Sarepta, 1 ♂ (ZMAS). Turkey: Dalyan, 2 ♀ (BMNH); Kusadasi, 2 ♂, 4 ♀ (BMNH), 1 ♂, 2 ♀ (ZFMK). Ukraine: Sem-Kolodezej, 1 ♀ (ZSMC).

Diagnosis. – Differs from *E. erum*, *E. locustus*, *E. discopis*, *E. viettei*, *E. hamponsi* and *E. aris* by the conical frons with a small point. Can be distinguished from *E. donum* in having labial palp three, two in *E. donum*. Male genitalia of *E. donum* unknown. Female genitalia of *E. donum* without signa, *E. bleszynskiellus* with two signa.

External characters male, female (fig. 44). – Wingspan 15-17 mm. Frons produced forward with clear point, creamy white to light brown, no ventral ridge; vertex creamy white to light brown; labial palp three, sides creamy white at base, becoming brown, creamy white from above and below; maxillary palp creamy white to light brown; antenna creamy white, greyish ringed. Thorax creamy white to brown; patagia creamy white with two broad longitudinal light brown stripes; tegulae creamy white with dark patch in the middle. Forewing, groundcolour creamy white densely suffused with ochreous to dark brown scales, posterior area with up to three small dark brown streaks; medial fascia single, straight or nearly so, running to one-third of the dorsum; subterminal line brown, about midway between terminal dots and termination of posterior area; area adjacent to terminal dots white to yellow; eight or nine black terminal dots, formula 2-2-3-1 or 2-2-3-2; fringes shiny with up to three brown lines. Hindwing creamy white to light brown, subterminal fascia present, termen darkly bordered; fringes creamy white with brownish line.

Tergite VIII (fig. 45). – Sclerite normally sclerotized, anterior part small, posterior part larger.

Male genitalia (fig. 124). – Uncus normal, tapering to sharp pointed tip; gnathos longer, with two dorsal thorns, terminal part short; tegumen without appendix angularis; sacculus swollen, processus of sacculus short, blunt, dorsal processus more or less straight, processus basalis short, broad at base tapering soon, processus inferior valvae small, cucullus relatively stout, bent upward; juxta triangular; vinculum small; aedeagus normal, one elongated group of small cornuti.

Female genitalia (fig. 173). – Papillae anales normal; membrane of tergite VIII without sclerotizations, edges of tergite VIII connected; ostium small; ductus bursae short, enlarged under ostium, halfway with small sac-like projection; ductus seminalis narrow; bursa copulatrix oblong, two thorn-shaped signa.

Biology. – Popescu-Gorj (1970) has caught *bleszynskiellus* in the dunes of the Donau river-delta. The specimens were caught in May, June, July and August.

Distribution (fig. 46). – Greece, Rumania, Turkey, Russia and Ukraine.

Remarks. – The holotype of *bleszynskiellus* could not be studied since the collections in Bucarest were closed for research during my visit to the museum.

## 22. *Euchromius bleszynskii* Roesler, 1975 (figs. 47-49, 125, 174)

*Euchromius bleszynskii* Roesler, 1975: 233. Holotype: ♂, 'Mongolia, Gobi Altai aimak, Zachuj Gobi 10 km N von Chatan chajrchan Gebirge, 1150 m, Exp. Dr. Z. Kaszab, 1966'. – 'Nr. 594, 27.VI.1966', GS 6556 (HNHM) [examined].

Material. – 3 ♂, 13 ♀. Mongolia: Gobi Altai aimak, 10 ♀ (BMNH), 2 ♂, 1 ♀ (HNHM), 2 ♀ (LNKD), 1 ♂ (RTAS).

Diagnosis. – See under *E. scobiolae*.

External characters male, female (fig. 47). – Wingspan 18-22 mm. Frons produced forward, with clear point, brown, no ventral ridge; vertex creamy white to light brown; labial palp two to two and a half, sides white at base, becoming brown, creamy white from above and below; maxillary palp brown, terminal part creamy white; antenna light brown, darker ringed. Thorax light to dark brown; patagia light brown with two broad longitudinal dark brown stripes; tegulae light brown, evenly mottled. Forewing, groundcolour creamy white, densely suffused with ochreous to dark brown scales, posterior area usually with dark spot; medial fascia single, slightly arched, running to one-third to one-fourth of the dorsum; subterminal line brown, closer to termination of posterior area than to terminal dots; area adjacent to terminal dots broad, white; six or seven

black terminal dots, very seldom an eighth vestigial dot, formula 2-3-1 or 2-3-2, very seldom 1-2-3-1; fringes shiny evenly grey-brown. Hindwing grey-brown, subterminal fascia present, termen darkly bordered; fringes white with brownish line.

Tergite VIII (fig. 48). – Sclerite normally sclerotized, anterior part small, rectangular, posterior part larger, rounded, stalk normal.

Male genitalia (fig. 125). – Uncus normal, tapering to sharp pointed tip; gnathos longer, two dorsal thorns, terminal part short; tegumen without appendix angularis; sacculus very broad, rounded, dorsal edge with pointed projection, processus of sacculus short, processus basalis short, broad at base narrowing soon, bent inward, processus inferior valvae inconspicuous, cucullus long, bent upward with anterior fold; juxta broad triangular; vinculum normal sized, pointed; aedeagus stout, most anterior part constricted.

Female genitalia (fig. 174). – Papillae anales large rounded, hairs long, bent at top; membrane of tergite VIII without sclerotizations, edges of tergite VIII connected; ostium with rectangular projection; ductus bursae short; ductus seminalis first part broad then narrowing; bursa copulatrix rounded to oblong, with inconspicuous more sclerotized part.

Biology. – Unknown. All specimens were caught in June at 950-1200 m altitude.

Distribution (fig. 49). – Mongolia.

Remarks. – Roesler (1975) figures the female genitalia with a distinct signum. There is no real signum present in the bursa copulatrix, only a faint more strongly sclerotized area.

### 23. *Euchromius scobiolae* Bleszynski, 1965 (figs. 9, 50, 51, 126, 175)

*Euchromius scobiolae* Bleszynski, 1965a: 79. Holotype: ♂, 'Kuschk', (MGAB) [not examined].

Material. – 1 ♂, 4 ♀. Afghanistan: Kuschk, 1 ♂ (BMNH). Tadzhikistan: Kurgan-Tjube, 1 ♀ (BMNH). Turkmeniya: Dort-Kuju, 1 ♀ (ZMAS); Peski, 1 ♀ (ZMAS); Sumbar, 1 ♀ (ZMAS).

Diagnosis. – Externally indistinguishable from *E. bleszynskii*. Differs in male genitalia in lacking the pointed projection of the dorsal edge of sacculus. Differs in female genitalia in having the ductus seminalis broad for a short length and the projection of the ostium rounded, not rectangular.

External characters male, female (figs. 9, 50). – Wingspan 16-21 mm. Frons produced forward with clear point, creamy white to light brown, no ventral ridge; vertex creamy white; labial palp two and a half, sides creamy white at base, becoming brown, creamy white from above and below; maxillary palp creamy

white to brown, dark ringed at base of last segment; antenna creamy white inconspicuous darkly ringed. Thorax brown; patagia light brown with two broad longitudinal brown stripes; tegulae brown, evenly mottled. Forewing, groundcolour creamy white, very densely suffused with ochreous to dark brown scales, posterior area sometimes with dark spot; medial fascia single, very faint, slightly arched, running to one-third of the dorsum; subterminal line ochreous to dark brown, closer to termination of posterior area than to terminal dots; area adjacent to terminal dots broad, white; seven or six terminal black dots, 2-3-2, 1-2-3-1 or 2-3-1; fringes shiny, grey-brown, no clear lines. Hindwing grey-brown, subterminal fascia faintly present, termen darkly bordered; fringes creamy white with brownish line.

Tergite VIII not seen due to bad dissection.

Male genitalia (fig. 126). – Uncus normal, tapering to sharp pointed tip; gnathos longer, two dorsal thorns, terminal part short; tegumen without appendix angularis; sacculus very broad, rounded, processus of sacculus stout, pointed upward, several stout spines at base, processus basalis short, broad at base, narrowing soon, bent inward, processus inferior valvae prominent, cucullus slender; juxta triangular; vinculum normal; aedeagus stout, most anterior part restricted.

Female genitalia (fig. 175). – Papillae anales large rounded, hairs long, bent at top; membrane of tergite VIII without sclerotizations, edges of tergite VIII connected; ostium with rounded projection; ductus bursae short; ductus seminalis starting broad, narrowing soon; bursa copulatrix oblong, roundish more sclerotized patch in centre, no signa.

Biology. – Unknown. Specimens caught in April.

Distribution (fig. 51). – Turkmeniya, Tadzhikistan and Afghanistan.

Remarks. – The holotype could not be studied since the collections in Bucarest were closed for research during my visit to the museum.

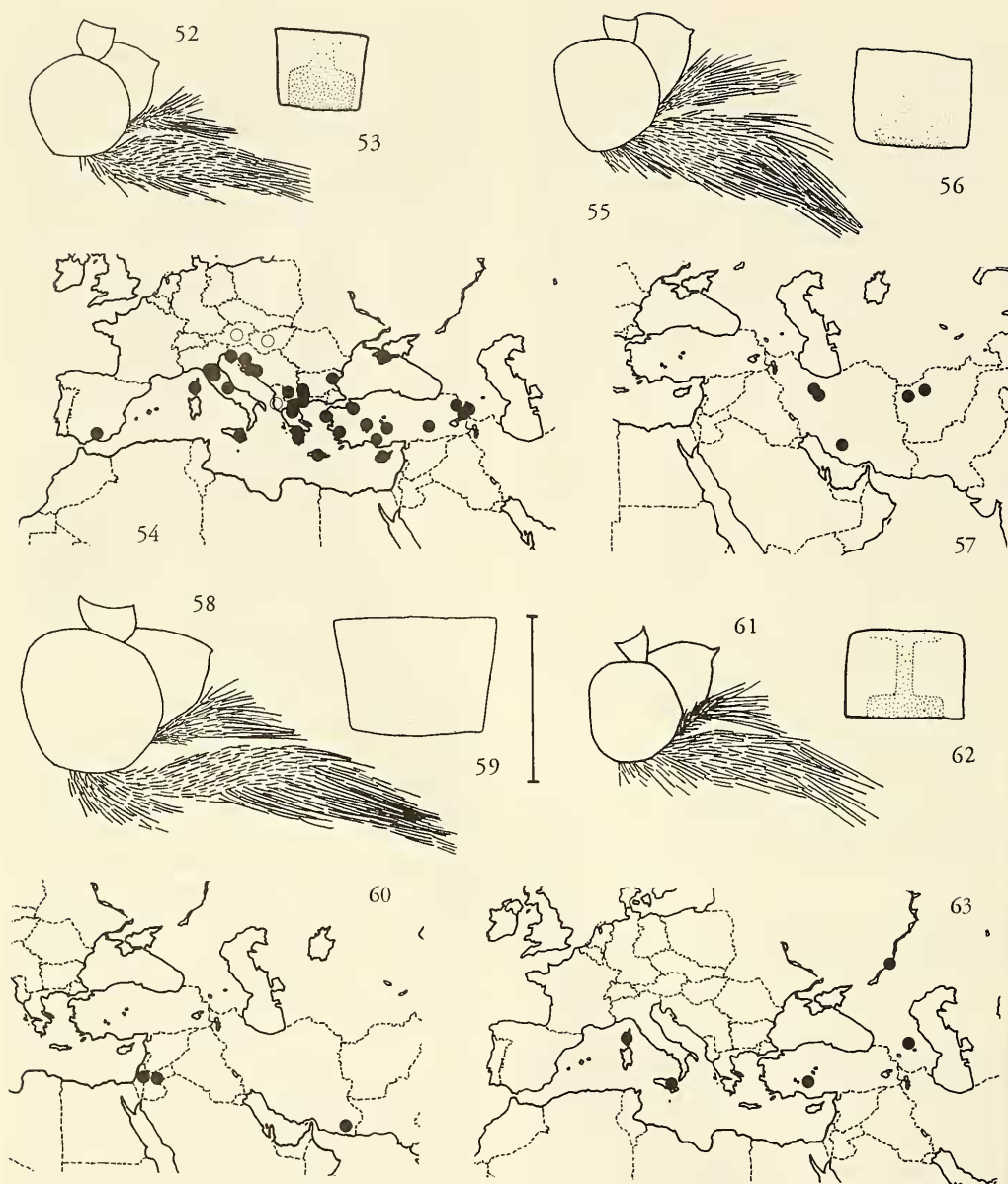
### 24. *Euchromius superbellus* (Zeller, 1849) (figs. 52-54, 127, 176)

*Crambus superbellus* Zeller, 1849: 314. Holotype: ♂, 'superbella m n 1/1 81', GS 2835 (BMNH) [examined].

*Eromene wockeella* Zeller, 1863: 53. Lectotype: ♂ (designated by Bleszynski (1961: 458)), '44', GS 5654 (BMNH) [examined].

*Ommatopteryx cypriusella* Amsel, 1958: 51. Holotype: ♂, '6.4.47 Kyrenia'. (LNKD) [examined].

Material. – 62 ♂, 52 ♀. Albania: no locality, 1 ♀ (NHNW). Austria: no locality, 2 ♂ (MCZC). Armenia: Yerevan, 2 ♀ (NHMW). Bulgaria: Blagoevaradski, 2 ♀ (MNHN), 2 ♂, 1 ♀ (RTAS); Kuzuch, 1 ♂ (RTAS); Nessebar, 1 ♂ (BMNH). France: Corsica, 1 ♂ (LNKD). Greece: 5 km S of



Figs. 52-63. *Euchromius* species. – 52, *E. superbellus*, head, lateral aspect, scales removed; 53, idem, sclerite of tergite VIII; 54, idem, distribution map (open circles: exact locality not found); 55, *E. keredjellus*, head, lateral aspect, scales removed; 56, idem, sclerite of tergite VIII; 57, idem, distribution map; 58, *E. malekalis*, head, lateral aspect, scales removed; 59, idem, sclerite of tergite VIII; 60, idem, distribution map; 61, *E. mouchai*, head, lateral aspect, scales removed; 62, idem, sclerite of tergite VIII; 63, idem, distribution map. Scale bar 0.5 mm to figs. 52-53, 55-56, 58-59, 61-62.

Monemvasia, 1 ♀ (RMNH); Heraklion, 1 ♂, 1 ♀ (LUCA); Iria, 1 ♀ (RTAS); Kalloni, 2 ♂, 2 ♀ (HULL); Kassandra, 1 ♂ (LNKD); Katerini, 1 ♀ (ZFMK); Kyrenia, 1 ♀ (BMNH), 2 ♂ (LNKD); Meteora, 1 ♂, 1 ♀ (RTAS), 4 ♂, 4 ♀ (IZUI). Hungary: no locality, 3 ♂, 1 ♀ (NHMW). Italy: Catania, 1

♂ (LUCA); Fano, 3 ♂, 5 ♀ (BMNH), 1 ♂ (LNKD), 1 ♂, 1 ♀ (ZSMC); Ficuzza, 1 ♀ (BMNH); Livorno, 1 ♂, 1 ♀ (BMNH), 1 ♂ (INER), 1 ♂, 1 ♀ (LNKD), 3 ♂, 4 ♀ (NHMW), 1 ♀ (ZSMC); Pescara, 1 ♀ (INER); Sicily, 3 ♂ (BMNH), 1 ♂ (LNKD); Toscana, 4 ♂, 1 ♀ (BMNH), 1 ♂ (NHMW). Spain: Malaga, 1



♂ (BMNH), 1 ♂ (NHMB). Turkey: Aksaray, 1 ♀ (ZMUC); Akşehir, 1 ♂ (ZSMC); Alanya, 1 ♂ (LUCA); Aralık 10 km N, 2 ♀ (ZMUC); Brusa, 1 ♂ (NHMW); Hazar Gölü, 1 ♀ (ZMUC); Kagitman 14 km E, 1 ♀ (ZMUC); Konya, 1 ♂ (LUCA); Kusadasi, 1 ♂ (BMNH). Ukraine: Jalta, 2 ♀ (ZMAS); Karadag, 8 ♂, 1 ♀ (ZMAS). Yugoslavia: Rabac, 2 ♂ (LNKD); Saraj, 1 ♂ (LUCA); Skopje, 1 ♀ (IZUI); Spalato, 4 ♂, 2 ♀ (NHMW); Split, 1 ♂, 6 ♀ (MHNG), 1 ♀ (RTAS); Sucurac, 2 ♀ (NHMW).

Diagnosis. — *E. superbellus* externally resembles *E. gozmanyi*, *E. rayatellus*, *E. malekalis*, *E. keredjellus* and *E. mouchai*. Differs from the latter three in lacking the one or two brown lines on the fringes of the forewing. Differs in male genitalia from *E. gozmanyi* and *E. rayatellus* by the dorsal thorns on the gnathos being elongated. Differs in female genitalia in having the ostium armed with a thumb-shaped projection.

External characters male, female (fig. 52). — Wingspan 13–15 mm. Frons produced forward with point, creamy white to brown, no ventral ridge; vertex creamy white; labial palp two, sides white at base, becoming brown to dark lead-grey, brown from above, creamy white from below; maxillary palp creamy white to dark brown-grey, terminal part lighter; antenna creamy white to grey, from about halfway darkly ringed. Thorax creamy white to brown-grey; patagia creamy white with two broad longitudinal light brown to lead-grey stripes; tegulae creamy white with dark patch in the middle. Forewing, ground-colour creamy white densely suffused with ochreous brown to dark grey scales; medial fascia single, straight or nearly so, running to one-third of the dorsum; subterminal line ochreous brown, about midway between terminal dots and termination of posterior area, sometimes closer to termination of posterior area than to terminal dots; area adjacent to terminal dots white; seven or six, seldom eight, black terminal dots, formula 2-3-2, 2-3-1 or seldom 1-2-3-2; fringes highly shiny evenly silver-grey. Hindwing light to dark grey, subterminal fascia present, termen darkly bordered; fringes creamy white to dark grey with one or two greyish lines. Specimens with very lightly coloured wings do occur, mainly from Italy.

Tergite VIII (fig. 53). — Sclerite normally sclerotized, posterior part large, rectangular, stalk and anterior part not distinguishable.

Male genitalia (fig. 127). — Uncus bent, tapering to sharp pointed tip, usually armed with thin dorsal crest; gnathos longer, two elongated dorsal thorns, terminal part long; tegumen without appendix angularis; sacculus broad, dorsal edge armed with dentate projection, processus of sacculus absent, processus basalis short, sharply bent inward, processus inferior valvae small, cucullus normal, bent upward; juxta triangular; vinculum normal; aedeagus normal, two patches of small cornuti.

Female genitalia (fig. 176). — Papillae anales normal; membrane of tergite VIII with rounded sclerotization near papillae anales, second sclerotization thumb-shaped, projecting near ostium, edges of tergite VIII not connected; ostium simple; ductus bursae normal; ductus seminalis starting broad, narrowing soon; bursa copulatrix oblong, one inconspicuous roundish area slightly more sclerotized.

Biology. — Found in grass- and weed-areas directly bordering the beach, but specimens are also caught up to 1700 m. There is one more or less continuous generation from April to September. The flight reaches its peak in June and July.

Distribution (fig. 54). — Confined to the northern part of the Mediterranean, and recorded from Spain, France, Italy, Austria, Yugoslavia, Hungary, Albania, Greece, Bulgaria, Turkey, Ukraine and Armenia. Possibly also in Portugal (Zerkowitz 1946, but see Monteiro 1982). Records of Leech (1901), Caradja (1925), Caradja & Meyrick (1933) from various parts of China refer to *Metaeuchromius* species or *E. raddeellus*. Records for Mozambique (Joannis 1927, Vari & Kroon 1986) refer to *E. klimeschi*.

Remarks. — The paralectotypes of *wockeella* Zeller, 1863 are lost, none have been found in BMNH or any other museum.

## 25. *Euchromius keredjellus* (Amsel, 1949) (figs. 55–57, 128, 177)

*Eromene keredjellus* Amsel, 1949: 233. Holotype: ♂, 'Iran, Elbursgebirge Keredj 4.6.1936 leg Brandt', GS 318 (LNKD) [examined].

Material. — 6 ♂, 6 ♀. Afghanistan: Herat, 2 ♀ (BMNH), 2 ♂ (LNKD); Kasi, 1 ♂ (BMNH). Iran: 90 km S. of Teheran, 1 ♂ (LNKD), 1 ♀ (RTAS); Keredj, 2 ♂ (LNKD), 2 ♀ (NHRS); Shiraz, 1 ♀ (NHRS).

Diagnosis. — *E. keredjellus* externally resembles *E. malekalis*, *E. mouchai*, *E. superbellus*, *E. rayatellus*, *E. gozmanyi*. Differs from the latter three in having one or two brown lines on the fringes of the forewing near the apex. *E. keredjellus* differs in male genitalia in having two cornuti in the aedeagus in combination with a short terminal part of the gnathos and a clear process of the sacculus. In female genitalia *E. keredjellus* can be separated in having the edge of tergite VIII connected and forming a little knot-shaped sclerotization at point of connection.

External characters male, female (fig. 55). — Wingspan 13–21 mm. Frons produced forward, with clear point, creamy white, no ventral ridge; vertex creamy white; labial palp two and a half, sides white to creamy white at base, becoming light brown to brown, creamy white from above, light brown from below; maxillary palp creamy white to light brown,

brown ringed at base of last segment; antenna creamy white, in some grey-brown ringed. Thorax light brown to brown; patagia creamy white with two broad longitudinal light brown stripes; tegulae creamy white with, sometimes very faint, dark patch in the middle. Forewing, groundcolour white, densely suffused with ochreous to dark brown scales, anterior area with faint streaks, posterior area sometimes with up to three dark brown streaks; medial fascia single slightly arched to nearly straight, running to one-third of the dorsum; subterminal line ochreous to dark brown, closer to termination of posterior area than to terminal dots; area adjacent to terminal dots broad, white; seven black terminal dots, formula 2-3-2; fringes shiny, with up to three ochreous brown lines, most clearly at apex. Hindwing creamy white to light brown, subterminal fascia present or not, termen darkly bordered; fringes pure white no brownish line.

Tergite VIII (fig. 56). – Sternite lightly sclerotized, only posterior part partly visible.

Male genitalia (fig. 128). – Uncus normal, slightly bent; gnathos longer, two dorsal thorns, terminal part short; tegumen without appendix angularis; sacculus broad, dorsal edge with strongly sclerotized ridge, processus of sacculus stout, short, straight, processus basalis small, bent inward, processus inferior valvae normal, cucullus large, slightly bent upward; juxta triangular; vinculum rectangular; aedeagus stout, anterior one group of small cornuti, posterior second group of large, circa five, cornuti.

Female genitalia (fig. 177). – Papillae anales large, hairs long; membrane of tergite VIII with inconspicuous band-shaped sclerotization, edges of tergite VIII connected, knot-like at point of connection; ostium slightly toad-stool shaped; ductus bursae short, broad under ostium; ductus seminalis starting broad narrowing soon; bursa copulatrix oblong, inconspicuous patch of stronger sclerotization visible.

Biology. – Collected in April, May and June. Occurs up to 1600 m.

Distribution (fig. 57). – Only found in Iran and Afghanistan so far.

Remarks. – Bleszynski (1965a) mentions NHRS as the museum where the holotype is deposited, but it was found in LNKD.

## 26. *Euchromius malekalis* (Amsel, 1961) (figs. 58-60, 129, 179)

*Eromene malekalis* Amsel, 1961: 330. Holotype: ♂, 'Iran, Balouchistan Bender Tchahbahar-Iranchar. Tahte Malek 750 m leg. Brandt, 1938', GS 3559A (NHRS) [examined].

Material. – 2 ♂, 3 ♀. Iran: Tahte Malek, 1 ♂ (NHRS). Jordan: Azraq ed Druz, 1 ♀ (BMNH); Wadi er Retem, 1 ♂, 2 ♀ (BMNH).

Diagnosis. – *E. malekalis* externally resembles *E. mouchai*, *E. keredjellus*, *E. superbullus*, *E. rayatellus* and *E. gozmanyi*. Differs from the later three in having fringes of the forewing with one or two brown lines, most clearly at the apex. Differs in male genitalia from *E. mouchai* and *E. keredjellus* in lacking a group of cornuti in the aedeagus. Differs in female genitalia by the bean-shaped ostium.

External characters male, female (fig. 58). – Wingspan 20-21 mm. Frons produced forward, with clear point, creamy white to light brown, no ventral ridge; vertex creamy white; labial palp three, white at base, becoming light brown, white from above and below; maxillary palp brown, terminal part white; antenna creamy white, from about the middle greyly ringed. Thorax white to light brown; patagia white with two broad longitudinal brown stripes; tegulae with dark patch in the middle. Forewing, groundcolour white densely suffused with ochreous to brown scales; medial fascia single, slightly arched to straight, running to one-fourth of the dorsum; subterminal line ochreous brown, about midway between terminal dots and termination of posterior area; area adjacent to terminal dots white; seven black terminal dots, formula 2-3-2; fringes with one to two brown lines at apex. Hindwing creamy white to brown, subterminal fascia present, termen darkly bordered; fringes white with brownish line.

Tergite VIII (fig. 59). – Sclerite normally sclerotized, pattern only visible at posterior part.

Male genitalia (fig. 129). – Uncus normal, tapering to pointed tip; gnathos longer, dorsal thorns normal, terminal part short; tegumen without appendix angularis; sacculus very broad, rounded, processus of sacculus short, bent upward, strongly sclerotized, processus basalis short, bent inward, processus inferior valvae at base of processus basalis, cucullus normal sized, slightly bent upward; juxta triangular, two small dorsal projections; vinculum normal sized; aedeagus normal sized, no cornuti.

Female genitalia (fig. 179). – Papillae anales large rounded, hairs long, bent at top; membrane of tergite VIII without sclerotizations; ostium bean-shaped, strongly sclerotized; ductus bursae lightly sclerotized; ductus seminalis starting broad narrowing soon; bursa copulatrix broad, with inconspicuous more sclerotized patch.

Biology. – Unknown. Caught in April and May. In Iran at 750 m altitude.

Distribution (fig. 60). – Jordan and Iran.

## 27. *Euchromius mouchai* Bleszynski, 1961 (figs. 61-63, 130, 178)

*Euchromius mouchai* Bleszynski, 1961: 464. Holotype: ♂, '1865 Rossia m., Sarepta, Chr.', GS 1142 [presumably lost].

Material. — 4 ♂, 4 ♀. France: Corsika, 1 ♀ (MNHN). Georgia: Lagodechi, 1 ♀ (ZMAS). Italy: Syracus, 1 ♂ (BMNH). Russia: Sarepta, 3 ♂, 1 ♀ (BMNH). Turkey: Konya, 1 ♀ (MNHN).

Diagnosis. — Externally resembling *E. keredjellus*, *E. malekalis*, *E. superbellus*, *E. rayatellus* and *E. gozmanyi*, but differs from the latter three in having the fringes of the forewing with one or two brown lines, most clearly at the apex; male genitalia have three groups of cornuti in the aedeagus. Differs in female genitalia in having a lip-shaped ostium in combination with free edges of tergite VIII.

External characters male, female (fig. 61). — Wingspan 14-16 mm. Frons sharply produced forward with clear point, creamy white, brown in middle, no ventral ridge; vertex creamy white; labial palp two and a half to three, sides white at base, becoming brown, white from above, creamy white from below; maxillary palp brown terminal part creamy white; antenna creamy white to light brown-grey, from about middle inconspicuously dark ringed. Thorax creamy white; patagia creamy white with two broad longitudinal brown stripes; tegulae creamy white with dark patch in the middle. Forewing, groundcolour creamy white densely suffused with ochreous to dark brown scales, anterior area with inconspicuous brown spot near medial fascia; medial fascia single, straight or nearly so, running to one-third of the dorsum; subterminal line ochreous to dark brown, sometimes inconspicuous, closer to termination of posterior area than to terminal dots; area adjacent to terminal dots broad, white; seven black terminal dots, formula 2-3-2; fringes shiny creamy white with two brown lines. Hindwing grey-brown, subterminal fascia present, termen darkly bordered; fringes white with brownish line.

Tergite VIII (fig. 62). — Sclerite normally sclerotized, posterior part rectangular larger than anterior part, stalk normal.

Male genitalia (fig. 130). — Uncus normal, tapering to sharp pointed tip; gnathos longer, two dorsal thorns, terminal part short; tegumen without appendix angularis; sacculus broad, dorsal edge with transparent narrow ridge, processus of sacculus very short, processus basalis short, broad at base, narrowing soon, processus inferior valvae small, cucullus very long, slender; juxta broad triangular; vinculum rectangular; aedeagus stout, three groups of cornuti.

Female genitalia (fig. 178). — Papillae anales normal; membrane of tergite VIII with two horizontal sclerotizations enclosing a square part of membrane, edges of tergite VIII not connected; ostium simple, no clear projections; ductus bursae short, broad near ostium; ductus seminalis starting broad at base, narrowing soon, bursa copulatrix oblong, inconspicuous

more strongly sclerotized area in lower part.

Biology. — Unknown. Very rare species.

Distribution (fig. 63). — France, Italy, Turkey, Georgia and Russia.

Remarks. — The holotype seems to be lost. Dr. Razowski informed me, that there is no Crambinae material in ZMPA.

## 28. *Euchromius nivalis* (Caradja, 1937) (figs. 64-66, 131, 181)

*Eromene nivalis* Caradja in: Caradja & Meyrick, 1937: 151. Lectotype: ♂ (designated by Bleszynski (1965a: 83)), 'Li-Kiang Provinz Nord Yuennan 20.VII.1935 Höne' GS 1741 (MGAB) [not examined].

Material. — 4 ♂, 1 ♀. China: Lijiang [Li-kiang], 1 ♂ (BMNH), 1 ♂ (RTAS), 1 ♂, 1 ♀ (ZFMK); Yunnan, 1 ♂ (BMNH).

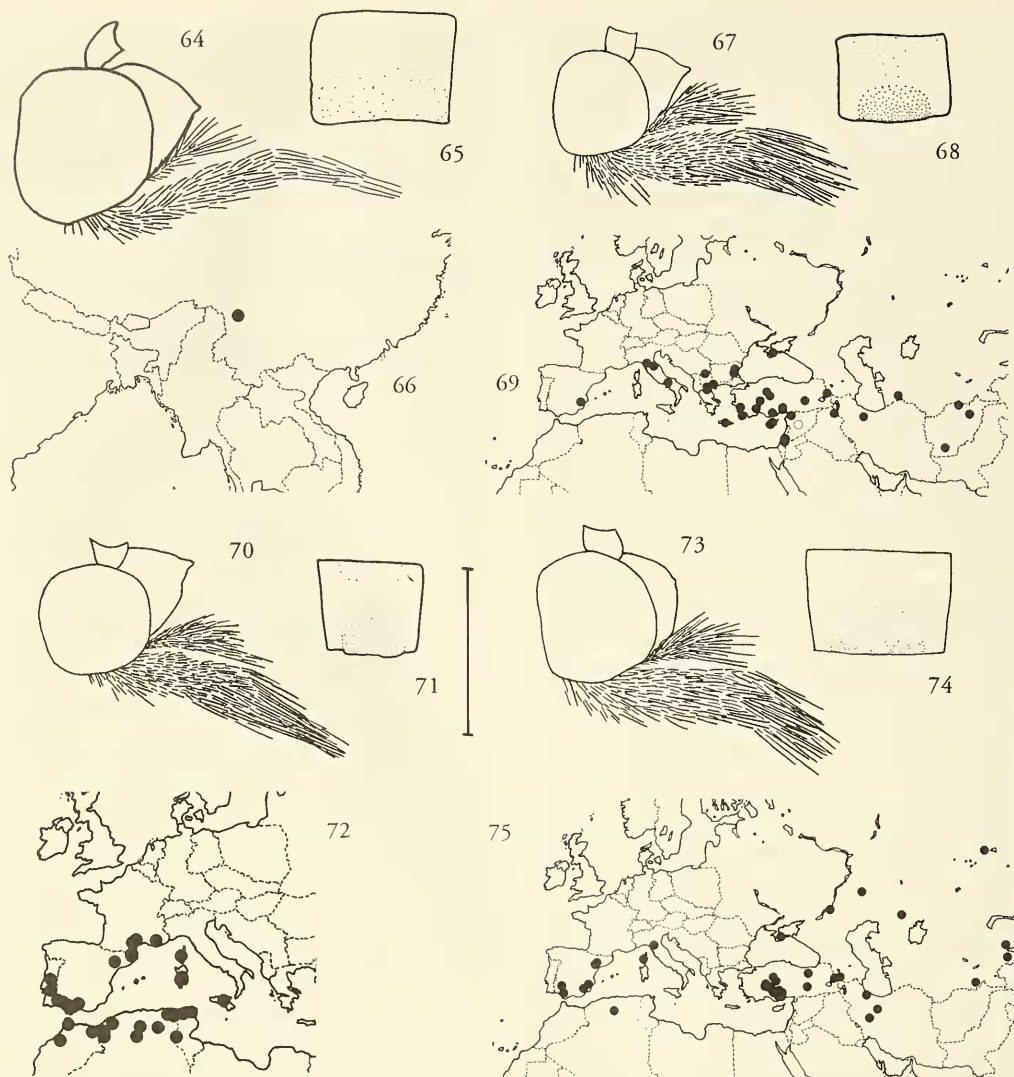
Diagnosis. — *E. nivalis* can be distinguished from all other species by its pure white groundcolour of the wings.

External characters male, female (fig. 64). — Wingspan 15-19 mm. Frons produced forward with inconspicuous point, pure white, no ventral ridge; vertex pure white; labial palp two and a half, sides yellow-white at base, becoming yellow, then yellow-grey, white from above, yellow from below; maxillary palp pure white, yellow at base; antenna creamy white, darkly ringed. Thorax pure white; patagia pure white with two broad longitudinal yellow stripes; tegulae pure white. Forewing, groundcolour pure white, anterior area not suffused with dark scales, posterior area densely suffused with ochreous to dark brown scales, posterior area with distinct dark brown spot near medial fascia; medial fascia single, bent outward, running to half to one-third of the dorsum; subterminal line ochreous to dark brown, inconspicuous to absent, closer to termination of posterior area than to terminal dots; area adjacent to terminal dots broad, white; seven or six black terminal dots, formula 2-3-2 or 2-3-1; fringes shiny, evenly yellow-grey. Hindwing grey-white, subterminal fascia absent, termen darkly bordered; fringes white, no clear line.

Tergite VIII (fig. 65). — Sclerite normally sclerotized, no pattern visible.

Male genitalia (fig. 131). — Uncus slender, tapering to sharp pointed tip; gnathos longer, with two large dorsal thorns, terminal part short; tegumen without appendix angularis; sacculus normal, processus of sacculus absent, processus basalis more or less free from back of valvae, swollen, ending in small point, processus inferior valvae elongated, cucullus slender, dorsal edges slightly more sclerotized; juxta triangular with two dorsal projections; vinculum very long; aedeagus long, slender, with set of short strongly bent cornuti,





Figs. 64-75. *Euchromius* species. — 64, *E. nivalis*, head, lateral aspect, scales removed; 65, idem, sclerite of tergite VIII; 66, idem, distribution map; 67, *E. rayatellus*, head, lateral aspect, scales removed; 68, idem, sclerite of tergite VIII; 69, idem, distribution map (open circle: exact locality not found); 70, *E. gozmanyi*, head, lateral aspect, scales removed; 71, idem, sclerite of tergite VIII; 72, idem, distribution map; 73, *E. gratiosellus*, head, lateral aspect, scales removed; 74, idem, sclerite of tergite VIII; 75, distribution map *E. gratiosellus* in the West Palearctic. Scale bar 0.5 mm to figs. 64-65, 67-68, 70-71, 73-74.

second, more anteriorly located group of long cornuti.

Female genitalia (fig. 181). — Papillae anales small; membrane of tergite VIII without sclerotization, edges of tergite VIII faintly connected; ostium simple, grooved; ductus bursae long; ductus seminalis narrow; bursa copulatrix roundish, no signa.

Biology. — Unknown. Specimens were caught in July and September at an altitude of 2800 to 3200 m.

Distribution (fig. 66). — Only known from the type locality, China, Province of Yunnan.

Remarks. — The lectotype of *nivalis* could not be studied since the collections in Bucarest were closed for research during my visit to the museum.

29. *Euchromius rayatellus* (Amsel, 1949)

(figs. 9, 67-69, 132, 180)

*Eromene rayatellus* Amsel, 1949: 278. Holotype: ♂, '13.7.35 Rayar', GS 12384 (BMNH) [examined].

Material. – 42 ♂, 55 ♀. Afghanistan: Balkh, 1 ♀ (LNKD); Derweshan, 1 ♂ (BMNH); Polichomri, 1 ♀ (BMNH), 1 ♂, 1 ♀ (LNKD). Bulgaria: Burgas, 1 ♂ (NHMW), Nessebar, 6 ♂, 8 ♀ (BMNH), 1 ♂, 1 ♀ (IZUI), 1 ♀ (LNKD), 1 ♂ (RTAS), 1 ♀ (ZFMK). Cyprus: Kolossi, 2 ♂, 2 ♀ (BMNH); Lanarca, 1 ♀ (BMNH). Greece: Chalkidike, 1 ♂, 3 ♀ (IZUI); Drepanon, 1 ♂ (PRIN); Ialyssos, 1 ♀ (ZMUC); Lithokhoran, 1 ♂ (LNKD); Malia, 1 ♂ (ZMUC); Neapolis, 5 ♂, 1 ♀ (NHMW); Phaistos, 1 ♂ (ZMAN); Pitsidia, 1 ♂ (LNKD); Platamon, 1 ♀ (ZFMK); Rhodos, 1 ♀ (ZFMK). Iran: Kendavan, 1 ♀ (INER). Iraq: Rayat, 1 ♂ (BMNH), 1 ♂ (LNKD). Israel: Hulch Swamp, 2 ♀ (BMNH); Daphne Settlement, 1 ♂ (BMNH); Deganya, 1 ♂, 1 ♀ (GORD). Italy: Fondi, 1 ♂ (INER); Fano, 1 ♀ (BMNH); Livorno, 1 ♂ (RMNH). Spain: Murcia, 1 ♀ (NHRS). Syria: no locality, 1 ♀ (MNHN). Turkey: Adana, 1 ♀ (INER), 1 ♂, 3 ♀ (MNHN); Akşehir, 1 ♀ (LUCA); Amanus, 1 ♀ (ZSMC); Ankara, 1 ♀ (LUCA); Diyadin 10 km NE, 1 ♂, 1 ♀ (ZMUC); Diyarbakir, 1 ♀ (ZFMK); Ergani, 1 ♀ (MHNG); Karatas, 1 ♂, 1 ♀ (LNKD), 1 ♂ (MNHN); Kusadasi, 3 ♂, 1 ♀ (BMNH), 5 ♀ (ZFMK); Mut, 1 ♂, 2 ♀ (NHMW); Sarkikaagas, 1 ♀ (INER); Tuz Gölü N., 1 ♀ (ZMUC). Turkmeniya: Kara-Kala, 2 ♀ (ISNB). Ukraine: Kara-dag, 4 ♂ (ZMAS). Yugoslavia: Crna Gora, 1 ♀ (LNKD).

Diagnosis. – *E. rayatellus* externally resembles *E. gozmanyi*, *E. superbellus*, *E. malekalis*, *E. keredjellus* and *E. mouchai*. Differs from the latter three in lacking one or two brown lines in the fringes of the forewing. *E. rayatellus* differs in male genitalia from *E. gozmanyi* and *E. superbellus* by its aedeagus with three groups of cornuti. Differs in female genitalia by the large shield-like lamella antevaginalis which is split in the middle.

External characters male, female (figs. 9, 67). – Wingspan 13-16 mm. Frons produced forward, with clear point, creamy white to brown, dorsal part darker, no ventral ridge; vertex creamy white to light brown; labial palp two and a half, sides creamy white at base, becoming brown, creamy white from above and below; maxillary palp creamy white, sometimes brown ringed at base of last segment; antenna creamy white. Thorax creamy white to brown; patagia creamy white with two broad longitudinal light brown stripes; tegulae creamy white with dark patch in the middle. Forewing, groundcolour creamy white, densely suffused with brown to dark brown scales; medial fascia single, nearly straight, running to one-third of the dorsum; subterminal line ochreous brown, about midway between terminal dots and termination of posterior area, seldom closer to termination of posterior area; area adjacent to terminal dots white, seldom broad; seven black terminal dots, formula 2-3-2, in some specimens an additional eighth dot occurs, formula 1-2-3-2; fringes shiny, evenly

grey-brown. Hindwing light brown to grey-brown, subterminal fascia present, termen darkly bordered; fringes creamy white with brownish line.

Tergite VIII (fig. 68). – Sclerite normal sclerotized, posterior part convex, stalk and anterior part very faint.

Male genitalia (fig. 132). – Uncus normal, tapering to sharp pointed tip; gnathos longer, two dorsal thorns, terminal part short; tegumen without appendix angularis; sacculus normal, processus of sacculus long, straight, processus basalis small, broad at base, tapering soon, strongly bent inward, processus inferior valvae slightly projecting, cucullus slender, bent upward; juxta broad triangular; vinculum rectangular; aedeagus small, stout, three groups of cornuti.

Female genitalia (fig. 180). – Papillae anales normal; membrane of tergite VIII with rounded punctate sclerotization, edges of tergite VIII connected; ostium small, lamella antevaginalis shield-like, split in the middle; ductus bursae short; ductus seminalis starting broad narrowing soon; bursa copulatrix oblong, with inconspicuous more sclerotized part in the centre.

Biology. – There is one long flight-period, starting in April, May and continuing until mid September, peak in July, August. This species ranges in altitude from sea-level up to 3000 m.

Distribution (fig. 69). – Spain, Italy, Yugoslavia, Greece, Bulgaria, Turkey, Ukraine, Turkmeniya, Afghanistan, Iran, Iraq, Syria and Israel.

30. *Euchromius gozmanyi* Bleszynski, 1961

(figs. 70-72, 133, 182)

*Euchromius gozmanyi* Bleszynski, 1961: 462. Holotype: ♂, 'Hispania Korb Chiclana 1912. IV.V', GS 1204 (HNHM) [examined]. Glaser, 1975: 50 [description of female].

Material. – 36 ♂, 46 ♀. Algeria: Aflou, 1 ♀ (BMNH); Aïn Fezza, 1 ♂ (BMNH); Biskra, 1 ♂ (BMNH); El Tarf, 1 ♀ (MNHN); Foret de Tenira, 1 ♂ (BMNH); Hassi-Babah, 1 ♂ (INER), 1 ♂ (MNHN); Marsa-Ben-Mehidi, 2 ♂, 2 ♀ (BMNH); Sebdou, 1 ♀ (BMNH); Sidi-bel-Abbes, 2 ♂ (BMNH); St. Charles, 1 ♂ (MNHN). France: Bormes, 1 ♀ (MNHN); Corse, Tour de Vignate, 1 ♀ (IZUI); Durban-Sigeon, 1 ♂ (ZMUC); Ile du Levant, 1 ♂ (MNHN); L'Almanarres, 2 ♂ (MNHN); Les Carannes de Fleury, 1 ♂ (HUIS); Petit Bagnes, 3 ♂, 1 ♀ (MNHN); Port La Nouvelle, 2 ♂ (MNHN). Italy: Licata, 6 ♂ (BMNH); Musci, 1 ♀ (LNKD); Salletta, 1 ♂ (INER). Morocco: Tangier, 3 ♀ (BMNH), 1 ♀ (LNKD), 2 ♀ (MNHN), 5 ♀ (ZFMK); Taourirt, 1 ♀ (BMNH); Thami, 1 ♀ (MNHN); no locality, 4 ♀ (BMNH). Portugal: Coimbra, 2 ♂ (MNHN); Setubal, 1 ♂ (MNHN). Spain: Aljarque, 1 ♀ (ZMUC); Cadiz, 2 ♂, 2 ♀ (GIEL), 1 ♀ (PRIN), 2 ♂, 5 ♀ (RTAS); Chiclana, 1 ♂ (BMNH); El Rampido, 1 ♂ (LNKD); La Escala, 1 ♀ (LNKD); Penalba, 1 ♂ (ZMUC); Periane, 1 ♂ (GIEL); Puerto de Sta. Maria, 5 ♂, 9 ♀ (HULL); Rosas, 2 ♀ (LNKD); San Lucar, 2 ♀ (BMNH); Trebujena, 2 ♀ (BMNH). Tunisia: Ain Draham, 1 ♂ (BMNH); Cap Bon, 1 ♂ (MNHN); Tozeur, 1 ♀ (INER).

Diagnosis. – *E. gozmanyi* resembles *E. superbellus*, *E. rayatellus*, *E. mouchai*, *E. keredjellus* and *E. malekalis*. Can be distinguished from the latter three species in lacking brown lines on the fringes of the forewing. Differs from above mentioned species in male genitalia in having one large cornutus. In female genitalia *E. gozmanyi* is distinguished by a sleeve-like structure above the ductus seminalis.

External characters male, female (fig. 70). – Wingspan 14–21 mm. Frons sharply produced forward, with clear point, creamy white to light brown, no ventral ridge; vertex creamy white; labial palp two and a half, sides white to creamy white at base, becoming light brown to brown from above and below; maxillary palp light brown, terminal part creamy white; antenna creamy white, from about the middle inconspicuously darkly ringed. Thorax creamy white to light brown; patagia creamy white to brown with two broad longitudinal brown stripes; tegulae creamy white to light brown with dark patch in middle. Forewing, groundcolour white densely suffused with ochreous to dark brown scales, anterior area sometimes with inconspicuous brown spot near medial fascia; medial fascia single, straight or nearly so, running to one-third to one-fourth of the dorsum; subterminal line ochreous brown, faint, about midway between terminal dots and termination of posterior area; area adjacent to terminal dots white; seven or six black terminal dots, formula 2-3-2 or 2-3-1; fringes highly shiny, evenly grey to brown-grey. Hindwing creamy white to grey, subterminal fascia present or not, termen darkly bordered; fringes creamy white with brownish line.

Tergite VIII (fig. 71). – Sclerite normally sclerotized, posterior part rectangular, stalk broad, anterior part inconspicuous.

Male genitalia (fig. 133). – Uncus normal, tapering to sharply pointed tip; gnathos longer, two dorsal thorns normal sized, terminal part short; tegumen without appendix angularis; sacculus very broad, process of sacculus short but free, strongly sclerotized, processus basalis short, sharply bent inward, processus inferior valvae small, at base of processus basalis, cucullus relatively broad, bent upward; juxta normal; aedeagus normal sized, slender, tapering anterior of anellus connection, one ridge cornutus.

Female genitalia (fig. 182). – Papillae anales normal; membrane of tergite VIII with strongly sclerotized horizontal patch near papillae anales, second patch less clear, rounded, more towards the ostium, edges of tergite VIII connected; ostium simple, rounded; ductus bursae long with clear sleeve-like structure above ductus seminalis; ductus seminalis starting broad, narrowing soon; bursa copulatrix elongated with two, not clear, sclerotized patches in the middle.

Biology. – This species seems to prefer the shores of salt-lakes and is reported to live on tidal shores. The caterpillar is said to survive temporary floods by the sea and live on *Salicornia* spec. (Luquet, pers. comm.). There are two, more or less continuous, generations from half April up to half October. The peaks in the flight-periods are June–July and September.

Distribution (fig. 72). – A West-Mediterranean species, occurring in Portugal, Spain, France, Italy, Tunisia, Algeria and Morocco.

Remarks. – From Biskra (Algeria) 1 ♂ is known with eight and nine terminal dots on its forewing, GS BM 17612, BMNH. Upon checking, the genital slide number of the holotype proved to be 1204 instead of 1075 (Bleszynski 1961).

### 31. *Euchromius gratiellus* (Caradja, 1910) (figs. 73–76, 134, 170)

*Eromene ramburiella gratiellus* Caradja, 1910: 116. Lectotype: ♂ (designated by Bleszynski (1965a: 76)), 'Lob-Noor, 1909, B.H.', (MGAB) [not examined].

*Euchromius ramburiellus*, Bleszynski (nec Duponchel), (1960: 204).

*Euchromius gartheellus* Derra, 1985: 237. Holotype: ♂, 'Türkei, Prov. Ankara Tuz Gölü 900 m, Leg. G.Derra 3.8.1984', GS 2284 (DERR) [not examined]. Ganey & Hacker (1986: 329) [new localities]. Derra (1987: 31) [synonymization with *gratiellus*].

*Euchromius siuxellus* Ganey & Hacker, 1986a: 82. Holotype: ♂, 'Türkei, Prov. Ankara, 39°10'N/33°20'E, Tuz Gölü N-Ufer, 900 m, 3.8.1984', GS 911 Ganey, Sofia [not examined]. Hacker (1986: 62) [synonymization with *gartheellus* Derra, 1985].

Material. – 85 ♂, 67 ♀. Algeria: El Mesrane, 1 ♀ (LNKD); Hassi Bahbah, 1 ♀ (BMNH); 3 ♀ (INER); 1 ♂, 5 ♀ (NHMW). Armenia: Chiva Urgene, 1 ♀ (BMNH). France: Coisika, 1 ♂ (MNHN). Iran: 90 Km S of Teheran, 1 ♂, 1 ♀ (LNKD); Shaku, 1 ♀ (BMNH). Italy: Livorno, 1 ♂ (NHMW). Kazakhstan: Emba, 2 ♂ (NHRS); Uralsk, 1 ♂, 3 ♀ (MNHN); Uzun-Agach, 2 ♀ (ZMAS). Kirgiziya: Naryn, 30 km E., 1 ♂ (ZMAS). Mongolia: 10 km NNE of Dalanzadgad, 3 ♂, 6 ♀ (BMNH); Talaïin Bulag, 2 ♂ (BMNH). Russia: Katunda, 10 km W., 1 ♂ (ZMAS); Sarepta, 2 ♀ (BMNH), 1 ♂ (INER), 4 ♂ (NHMW), 1 ♀ (ZEMK); Troikoe, 2 ♀ (RTAS). Spain: Alcaniz, 1 ♀ (GIEL); Dolores, 1 ♂, 1 ♀ (GIEL), 1 ♂, 1 ♀ (RTAS), 1 ♂ (TMSA); El Ronquillo, 1 ♀ (HULL); Penalba, 1 ♂ (ZMUC); Puerto de Sta. Maria, 1 ♀ (HULL); Puerto Lambreras, 1 ♂ (PRIN). Tadzhikistan: Dusti, 1 ♂ (RTAS). Turkey: 20 km NO of Konya, 2 ♀ (LNKD), 5 ♂ (NHMW); 40 km SW of Elazig; Aksehir, 1 ♂, 1 ♀ (NHMW); Ankara, 4 ♂, 1 ♀ (BMNH), 1 ♂, 3 ♀ (MHNG), 1 ♂ (NHMW); Cay, 10 ♂, 4 ♀ (MAES); Diyardin 10 km NE, 1 ♂, 2 ♀ (ZMUC); Eregli, 2 ♂, 1 ♀ (ZSMC); Karapinar, 2 ♂ (LNKD), 2 ♂, 2 ♀ (NHMW); Kelkit, 4 ♂, 4 ♀ (BMNH); Konya, 1 ♂, 1 ♀ (LNKD); Tuz Gölü, 6 ♂, 2 ♀ (BMNH), 2 ♂ (CASC); 3 ♂, 3 ♀ (DERR), 2 ♂, 1 ♀ (RTAS), 1 ♂ (TMSA); Tuz Gölü N.shore, 2 ♂, (LNKD), 3 ♂ (NHMW), 2 ♂, 2 ♀ (RTAS), 1 ♂, 2 ♀ (ZMUC), 4 ♂, 3 ♀ (ZSMC). Ukraine: Karadag, 1 ♂ (ZMAS).



Diagnosis. – Externally undistinguishable from *E. jaxartellus* and *E. ramburiellus*. On the average *E. gratiosellus* is slightly larger and lighter coloured. *E. gratiosellus* differs from *E. superbellus*, *E. rayatellus* and *E. gozmanyi* in having nine or eight black terminal dots whereas the former species almost always have six or seven dots. In male genitalia *E. gratiosellus* differs from *E. jaxartellus* and *E. ramburiellus* in the having sacculus less broad and processus of sacculus more straight and slender. Processus inferior valvae of *E. gratiosellus* is rounded, elongated in *E. ramburiellus*. In female genitalia the ostium of *E. gratiosellus* is broadly rounded with parallel sides, longer and pointed in *E. ramburiellus*, broader and dilated in *E. jaxartellus*. Spined sack-like terminal part of ductus bursae much smaller in *E. gratiosellus* than in *E. jaxartellus* and *E. ramburiellus*.

External characters male, female (fig. 73). – Wingspan 17–23 mm. Frons produced forward with point, creamy white to light brown, no ventral ridge; vertex creamy white to light brown; labial palp two and a half, sides white to creamy white at base becoming light brown to brown, white from above and below; maxillary palp creamy white, dark ringed at base of last segment, terminal part creamy white; antenna creamy white, darkly ringed, sometimes with dorsal grey line. Thorax creamy white to light brown; patagia creamy white, no clear broad longitudinal brown stripes; tegulae creamy white to light brown, evenly mottled. Forewing, groundcolour white, densely suffused with grey to dark brown scales, anterior area more or less evenly coloured, posterior area with a yellowish to dark brown spot in the middle; medial fascia single, gently arched to nearly straight, running to one-third of the dorsum; subterminal line ochreous brown, sometimes only faintly visible, about midway between terminal dots and termination of posterior area; area adjacent to terminal dots white; eight or nine black terminal dots, formula 2-2-3-1 or 2-2-3-2; fringes shiny creamy white, three or four brown lines. Hindwing creamy white to grey, subterminal fascia present; termen darkly bordered, fringes white with or without a brownish line.

Tergite VIII (fig. 74). – Sclerite normally sclerotized, posterior part triangular, stalk short inconspicuous, anterior part narrow, very faint.

Male genitalia (fig. 134). – Uncus normal, tapering to sharply pointed tip; gnathos longer, two dorsal thorns normal sized, terminal part short; tegumen without appendix angularis; sacculus narrow, processus of sacculus slender, slightly bent upward, not or just slightly overlapping cucullus (watch out for distortions caused by the coverslip), strongly sclerotized, processus basalis short, broad at base narrowing soon, pointing inward, strongly sclerotized, processus inferior valvae large, distinctly projecting, rounded, cu-

cullus very slender more or less bent upward; juxta normal; vinculum normal; aedeagus short, broad, three groups of cornuti.

Female genitalia (fig. 170). – Papillae anales normal; membrane of tergite VIII without sclerotizations, edges of tergite VIII connected; ostium thumb-shaped, broadly rounded, with parallel sides; ductus bursae under ostium enlarged armed with many small spines. very small sac-like pouch connected to enlarged part of ductus bursae; ductus seminalis narrow; bursa copulatrix oblong with two thorn-shaped signa.

Biology. – Several times recorded from salt deserts. Caught in April up to October at an altitude of up to 1450 m.

Distribution (figs. 75, 76). – Algeria, Spain, France, Italy, Turkey, Iran, Ukraine, Russia, Armenia, Kazakhstan, Kirgiziya, Tadzhikistan and Mongolia.

Remarks. – The holotype of *gratiosellus* could not be studied since the collections in Bucarest were closed for research during my visit to the museum.

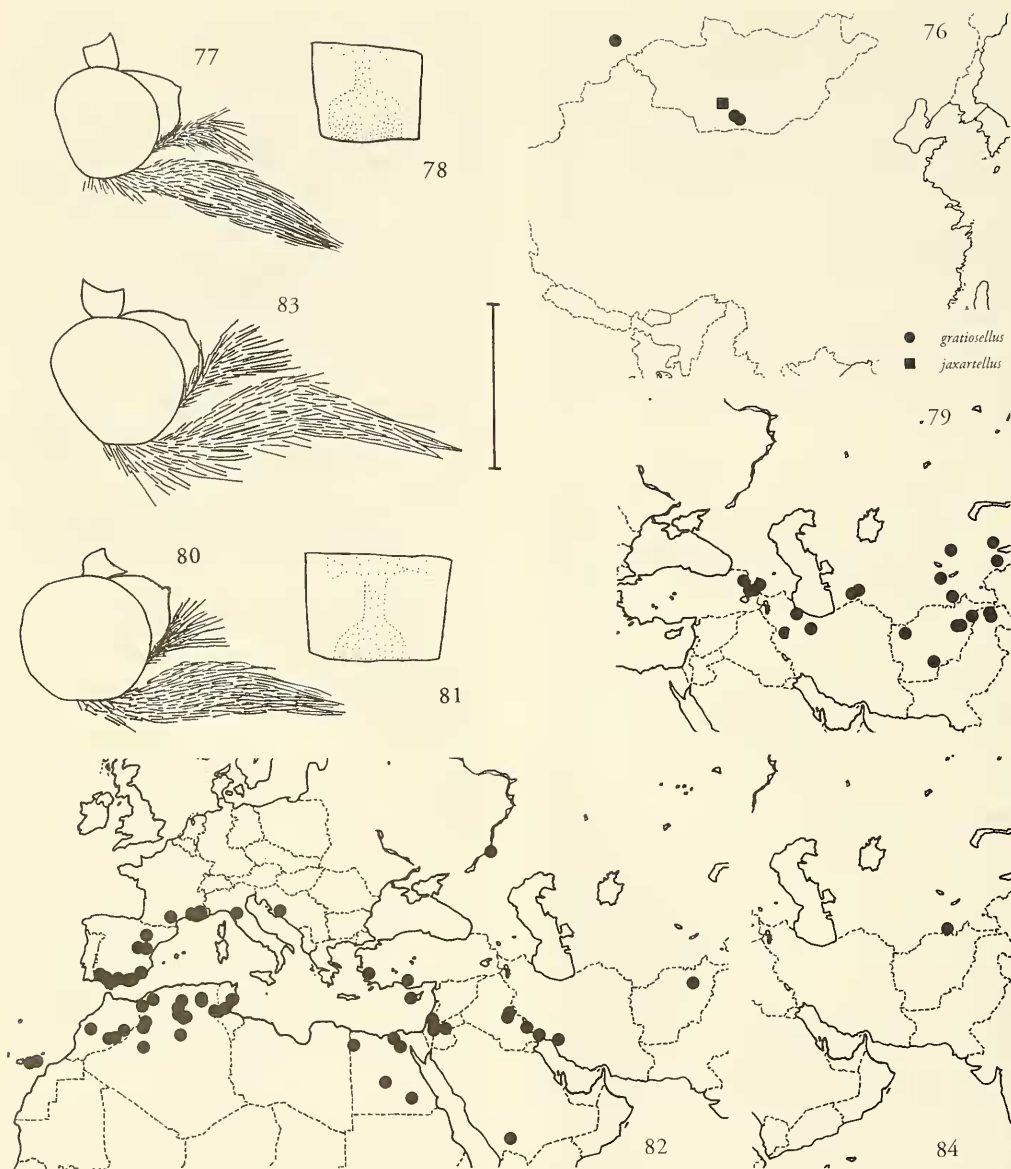
### 32. *Euchromius jaxartellus* (Erschoff, 1874) (figs. 76–79, 135, 183)

*Eromene jaxartella* Erschoff, 1874: 82. Holotype: ♀, no label, GS 7602 (ZMAS) [examined].

Material. – 45 ♂, 60 ♀. Afghanistan: 22 km E of Kabul, 1 ♀ (LNKD); Bashgul, 1 ♀ (LNKD); Kabul, 1 ♀ (LNKD); Kandahar, 1 ♀ (ZSMC); Kuschik, 1 ♀ (BMNH); Pol-i-Charchi, 1 ♀ (LNKD), 1 ♀ (RTAS); Sarobi, 1 ♂ (LNKD). Armenia: Chiva Urgene, 1 ♂, 1 ♀ (BMNH). Iran: 95 km N of Kermanshah, 1 ♀ (LNKD); Keredj, 1 ♂ (LNKD), 1 ♀ (NHRS); Shaku, 1 ♀ (NHMW). Kazakhstan: Aulie Ata, 1 ♂ (BMNH); Dzambul'skaya, 35 ♂, 36 ♀ (ZMAS). Kirgiziya: Naryn, 1 ♀ (ZMAS). Mongolia: Bayan Hongor, oase Echin gol [exact locality not found], 1 ♂ (BMNH). Pakistan: Gilgit, 4 ♀ (ZSMC); Hunza-Nagar, 1 ♀ (ZSMC). Tadzhikistan: Kurgan-Tjube, 1 ♂ (NHMW). Turkey: Aralik 10 km NW, 2 ♀ (ZMUC); Diyadin 10 km NE, 2 ♂ (ZMUC); Kagizman 14 km E, 2 ♂, 1 ♀ (ZMUC). Turkmeniya: Kara-Kala, 1 ♀ (BMNH), 1 ♂, 2 ♀ (ISNB), 1 ♀ (RTAS).

Diagnosis. – *E. jaxartellus* externally resembles *E. ramburiellus*, *E. gratiosellus*, *E. confusus*, *E. pulverosus*, *E. zagulajevi*. Differs from latter three species in having up to three dark lines on the fringes of the forewing. *E. jaxartellus* differs in male genitalia from *E. confusus* and *E. pulverosus* in having three cornuti in the aedeagus, differs from *E. gratiosellus* and *E. ramburiellus* in the processus of sacculus, at the most, reaching one-third of the cucullus and the processus is not longer than the breadth of cucullus. Differs in female genitalia in having the projection of the ostium broad triangular.

External characters male, female. (fig. 77). – Wingspan 14–17 mm. Frons produced forward with



Figs. 76-84. *Euchromius* species. – 76, distribution map of *E. gratiosellus* and *E. jaxartellus*; 77, *E. jaxartellus*, head, lateral aspect, scales removed; 78, sclerite of tergite VIII; 79, distribution map of *E. jaxartellus* in the West Palearctic; 80, *E. ramburiellus*, head, lateral aspect, scales removed; 81, idem, sclerite of tergite VIII; 82, idem, distribution map; 83, *E. zagulajevi*, head, lateral aspect, scales removed; 84, idem, distribution map. Scale bar 0.5 mm to figs. 77-78, 80-81, 83.

minute point, creamy white, dorsal slightly darker, no ventral ridge; vertex creamy white; labial palp two and a half, sides creamy white at base, becoming brown, creamy white from above and below; maxillary palp creamy white, brown at base of last segment; antenna creamy white, from about the middle greyish

ringed. Thorax creamy white to light brown; patagia creamy white with two broad longitudinal brown stripes; tegulae creamy white, evenly mottled. Forewing, groundcolour creamy white, densely suffused with ochreous to dark brown scales, posterior area sometimes with small dark brown streaks; medi-

al fascia single, arched to nearly straight, running to one-third of the dorsum; subterminal line brown, about midway between terminal dots and termination of posterior area; area adjacent to terminal dots white to yellowish; nine or eight black terminal dots, formula 2-2-3-2 or 2-2-3-1; fringes slightly shiny with up to four brown lines. Hindwing creamy white to brown-grey, subterminal fascia present, termen darkly bordered; fringes creamy white with brownish line.

Tergite VIII (fig. 78). – Sclerite normal sclerotized, anterior part small, very faint, posterior part large, rectangular.

Male genitalia (fig. 135). – Uncus normal, tapering to sharp pointed tip; gnathos longer, two dorsal thorns, terminal part short; tegumen without appendix angularis; sacculus narrow, processus of sacculus short, bent upward, processus basalis short bent downward, processus inferior valvae large, elongated, cucullus normal, bent upward; juxta triangular; vinculum rectangular; aedeagus short, swollen, three groups of cornuti.

Female genitalia (fig. 183). – Papillae anales normal; membrane of tergite VIII without sclerotizations, edges of tergite VIII connected; ostium with broad equal-sided triangular projection, top narrow, not broad rounded; ductus bursae under ostium enlarged, armed with many spines, small sac-like appendix connected to enlarged part of ductus bursae; ductus seminalis narrow; bursa copulatrix rounded, armed with two thorn-shaped signa.

Biology. – Unknown. One flight-period from April up to half September, peak in July and August. Caught up to 2200 m altitude.

Distribution (figs. 76, 79). – Armenia, Turkmeniya, Tadzhikistan, Kirgiziya, Kazakhstan, Iran, Afghanistan, Pakistan and Mongolia.

Remarks. – Ganev & Hacker's (1984: 238) record from Turkey is very doubtful and may concern *Euchromius gratiosellus* or *Euchromius ramburiellus*. Mariani's (1938: 160) records from Sicily may refer to *E. gratiosellus* or *E. ramburiellus*.

### 33. *Euchromius ramburiellus* (Duponchel, 1836) (figs. 80-82, 136, 185)

*Crambus ramburiellus* Duponchel, 1836: 83. Holotype: ♀, '*Crambus ramburiellus*', GS 3778 (MNHN) [examined]. *Crambus zonellus* Zeller, 1847: 758. Holotype: ♀, [Italien, Sicilien, type lost].

*Eromene ramburiellus* var. *luteella* Caradja, 1910: 116. Lectotype: ♂ (designated by Bleszynski (1965a: 74)), 'Biskra 8.VI.07, Chrétien', (MGAB) [not examined].

*Eromene islamella* Amsel, 1949: 235. Lectotype: ♂ (designated by Bleszynski (1965a: 74)), 'Iran, Fars, 1937 Strasse Kazeroun-Bouchir Tchouroum 1000 m. leg. Brandt 17.III', GS 319 (LNKD) [examined].

Material. – 145 ♂, 150 ♀. Afghanistan: Polichomri, 1 ♂ (LNKD). Algeria: Afrou, 1 ♀ (BMNH); Aïn Sefra, 1 ♂, 3 ♀ (BMNH); Beni Ounif, 1 ♂, 2 ♀ (MHNG), 1 ♂ (NHMB); Biskra, 7 ♂ (BMNH), 1 ♀ (ZSMC); Bou-Saada Faroult, 1 ♀ (BMNH); El Golea, 1 ♂, 2 ♀ (INER), 3 ♂, 2 ♀ (MNHN), 1 ♂ (ZSMC); El Kantara, 6 ♂, 6 ♀ (BMNH); El Ouraya, 1 ♀ (BMNH); Ghardaia, 2 ♂ (BMNH); Hammam-es-Salahin, 1 ♀ (BMNH); Hassi Babak, 1 ♂ (NHMW); Hassi Bahbah, 1 ♀ (INER), 1 ♂ (NHMW); Laghouat, 3 ♂, 1 ♀ (MNHN); Oued Nssa, 1 ♂ (BMNH); Sebdou, 1 ♂, 3 ♀ (BMNH); Sidi-bel-Abes, 1 ♂, 3 ♀ (BMNH); Sidi-Okba, 1 ♀ (BMNH). Cyprus: Kolossi, 2 ♂, 1 ♀ (BMNH); Limasol, 2 ♀ (BMNH). Egypt: Alexandria, 1 ♂ (MNHN); Aswan, 1 ♂, 1 ♀ (BMNH); Caïro, 2 ♀ (NHMW); Khamissa, 2 ♂, 2 ♀ (BMNH); Siwa, 6 ♂, 12 ♀ (BMNH). France: Camargue, 1 ♀ (LNKD), 1 ♀ (ZFMK); Digne, 2 ♂, 2 ♀ (BMNH); Ile du Levant, 1 ♂ (MNHN); MINERVOIS, 1 ♂ (HUIS); Oraison, 2 ♀ (LNKD); Sorgues, 1 ♀ (LNKD); Volonne, 6 ♂, 2 ♀ (ISNB). Iran: Kazeroun-Bouchir Tchouroum, 1 ♂ (LNKD), 2 ♂, 2 ♀ (NHRS); Shadegan, 1 ♂ (LNKD); Tchouroum, 1 ♀ (NHRS). Iraq: Amarah, 3 ♂, 5 ♀ (BMNH); Bagdad, 5 ♂, 4 ♀ (BMNH), 1 ♂, 1 ♀ (LNKD); Karradah, 1 ♂ (BMNH). Israel: Haôfa, 5 ♂, 4 ♀ (NHMW); En Gedi, 1 ♂, 1 ♀ (BMNH). Italy: Livorno, 1 ♀ (BMNH), 2 ♂, 1 ♀ (NHMW). Jordan: Azraq ed Druz, 2 ♂, 5 ♀ (BMNH); Dead Sea, 1 ♀ (LNKD), 1 ♀ (ZFMK); Fuhes, 1 ♂, 1 ♀ (LNKD); Qa el Umari, 1 ♀ (BMNH); Wadi er Retem, 1 ♂, 2 ♀ (BMNH). Libya: Sidi Mesri (locality not found), 1 ♂, 1 ♀ (BMNH). Morocco: Asni, 1 ♀ (LNKD); Erfoud area, 9 ♂, 7 ♀ (ZMUC); Ksar es Souk, 1 ♂ (LNKD); Tafilalt, 1 ♀ (MNHN); Tansikht, 1 ♀ (LNKD). Russia: Sarepta, 3 ♂ (BMNH). Saudi Arabia: 150-600 km SSW of Riad, 1 ♀ (LNKD). Spain: Albarracin, 1 ♂ (INER); Alhama de Murcia, 1 ♂ (ZFMK); Huelva, 1 ♀ (BMNH); Jandia, 1 ♀ (ZFMK); Orgiva, 1 ♀ (BMNH); Malaga, 1 ♀ (GIEL); Maspalomas, 1 ♂, 1 ♀ (LNKD), 1 ♂, 5 ♀ (NHMW); Mazagon, 1 ♂ (LNKD); Motril, 1 ♀ (ZFMK); Murcia, 1 ♂ (GIEL); Periana, 1 ♂ (DERR), 2 ♂, 2 ♀ (GIEL), 2 ♂, 1 ♀ (RTAS); Rio de Baza, 1 ♂, 2 ♀ (ZMUC); Ronquillo, 1 ♀ (GIEL); San Roque, 1 ♀ (GIEL); Valdeltormo, 1 ♂, 1 ♀ (GIEL); Zaragosa, 1 ♀ (MNHN); Zujar, 3 ♂ (GIEL), 1 ♀ (PRIN), 1 ♂ (TMSA), 2 ♂ (RTAS). Tunisia: 65 km NW of Tozeur, 2 ♂ (ZMUC); Maknassy, 1 ♀ (INER); Nefta, 1 ♂ (INER), 1 ♀ (ZMUC); Sfax, 10 ♂, 15 ♀ (BMNH), 16 ♂, 7 ♀ (HNHM); Tozeur, 1 ♀ (INER), 2 ♀ (MNHN). Turkey: Alanya, 1 ♀ (LUCA); Kusadasi, 1 ♂ (LUCA). Yugoslavia: Sucurac, 1 ♀ (BMNH), 1 ♂ (NHMW).

Diagnosis. – See under *E. gratiosellus*.

External characters male, female (fig. 80). – Wingspan 16-20 mm. Frons produced forward with point, creamy white to light brown, no ventral ridge; vertex creamy white; labial palp two, sides white at base, becoming brown, white to creamy white from above and below; maxillary palp creamy white, brown ringed at base of last segment, terminal part white; antenna creamy white, from about the middle darkly ringed. Thorax creamy white to brown; patagia creamy white to brown-grey; regulae creamy white to brown-grey, evenly mottled. Forewing, groundcolour creamy white densely suffused with ochreous to dark brown scales, usually with dark brown spot in middle of posterior area; medial fascia single, gently arched or nearly straight, running to one-third of the dorsum;



subterminal line ochreous to dark brown, about midway between terminal dots and termination of posterior area; area adjacent to terminal dots white; nine or eight black terminal dots, formula 2-2-3-2 or 2-2-3-1; fringes shiny, creamy white with two or three brown lines. Hindwing creamy white to grey-brown, subterminal fascia present or not, termen darkly bordered; fringes creamy white with brownish line.

Tergite VIII (fig. 81). – Sternite normally sclerotized, posterior part rounded, stalk normal, anterior part narrow.

Male genitalia (fig. 136). – Uncus normal, tapering to sharply pointed tip; gnathos longer, two dorsal thorns normal sized, terminal part short; tegumen without appendix angularis; sacculus broad, processus of sacculus stout, clearly bent upward overlapping cucullus, strongly sclerotized, processus basalis short, sharply bent inward, gradually tapering, strongly sclerotized, processus inferior valvae large, flat, elongated, cucullus slender, bent upward; juxta normal; vinculum normal; aedeagus short, relatively broad, three or four groups of cornuti.

Female genitalia (fig. 185). – Papillae anales small; membrane of tergite VIII with very faint sclerotization above ostium, edges of tergite VIII connected; ostium thumb-shaped, more or less pointed; ductus bursae enlarged and armed with many cornuti near ostium, small sac-like pouch at middle of ductus bursae; ductus seminalis narrow; bursa copulatrix rounded to oblong, two thorn-shaped signa.

Biology. – Lhomme (1935-1946) mentions the dead leaves of *Cirsium* spec., *Hieracium* spec. and *Cichorium* spec. (all Compositae) at the base of the plants as the food for the larvae. The larvae can be found in silk tunnels until October.

Flight-periods: south of the Mediterranean Sea, Canary Islands eastward including Egypt from February to early November (peaks April-May-June and August); north of the Mediterranean Sea, Spain eastward including Turkey from March till the end of September (peak July to September); and the area east of the Mediterranean Sea, Israel and eastwards the specimens were caught from March up the first week of July and in September up to the first week of November, with peaks in March, April and May.

This species only occurs at lower altitudes (highest record Morocco 1200 m).

Distribution (fig. 82). – Spain, France, Italy, Yugoslavia, Turkey, Cyprus, Russia, Afghanistan, Iran, Iraq, Jordan, Israel, Egypt, Libya, Tunisia, Algeria and Morocco. Also recorded from Portugal (Monteiro 1972: 13) and Bulgaria (Ganev 1985: 172).

Remarks. – The lectotype of *Euchromius islamellus* (Amsel, 1949) is not in NHRS as stated by Bleszynski (1965a: 74), but in LNKD.

### 34. *Euchromius zagulajevi* Bleszynski, 1965 (figs. 83, 84, 184)

*Euchromius zagulajevi* Bleszynski, 1965a: 80. Holotype, ♀, 'Kafirnigan, 31-VII.', GS 3983 (ZMAS) [examined].

Material. – 1 ♀. Tadzhikistan: Kafirnigan, 1 ♀ (ZMAS).

Diagnosis. – See under *Euchromius pulverosus*.

External characters female (fig. 83). – Wingspan 17 mm. Frons slightly produced forward with very minute point, creamy white, no ventral ridge; vertex creamy white; labial palp two, sides creamy white at base, becoming brown, creamy white from above and below; maxillary palp creamy white, dark brown ringed at base of last segment; antenna creamy white, from about halfway inconspicuous dark ringed. Thorax creamy white; patagia creamy white with two broad longitudinal light brown stripes; regulae creamy white to light brown, evenly mottled. Forewing, groundcolour creamy white densely suffused with ochreous to dark brown scales; medial fascia single, straight or nearly so, running to one-third of the dorsum; subterminal line ochreous to dark brown, about midway between terminal dots and termination of posterior area; area adjacent to terminal dots white, eight black terminal dots, formula 2-2-3-1, fringes white at base then one broad ochreous brown line. Hindwing creamy white, subterminal fascia faintly present, termen darkly bordered; fringes creamy white with faint brownish line.

Female genitalia (fig. 184). – Papillae anales normal; membrane of tergite VIII without sclerotizations; tergite VIII with inconspicuous collar, edges connected; ostium simple, ductus bursae strongly sclerotized, especially at edge in middle part, ductus seminalis narrow, bursa copulatrix oblong, drop-shaped, no signa.

Biology. – Unknown. The unique holotype was caught at the end of July.

Distribution (fig. 84). – Tadzhikistan.

Remarks. – This species is only known from the female holotype.

### 35. *Euchromius donum* Schouten, 1988 (fig. 186)

*Euchromius donum* Schouten, 1988: 28. Holotype: ♀, 'Haro-Ali, Gurra 6. April 01. (C. V. Erlanger).' GS 12111 (BMNH) [examined].

Material. – 1 ♀.

Diagnosis. – Differs from all species by its single medial fascia in combination with nine or eight black terminal dots, the bursa copulatrix without a signum and the ostium simple tongue-shaped.

Distribution. – Ethiopia.

36. *Euchromius sudanellus* Bleszynski, 1965  
(figs. 85-87, 137, 187)

*Euchromius sudanellus* Bleszynski, 1965a: 79. Holotype: ♂, 'Sudan sept. or. Port Sudan Rhaz Arbaat 23.VI.1962 leg R. Remane', GS 1308 (ZSMC) [examined].

Material. – 1 ♂, 1 ♀. Sudan: Port Sudan, 1 ♂, 1 ♀ (ZSMC).

Diagnosis. – Externally almost indistinguishable from *E. cambridgei* see under that species.

External characters male, female (fig. 85). – Wingspan 13 mm. Frons produced forward with small point, creamy white, no ventral ridge; vertex creamy white; labial palp two and a half, sides white to creamy white at base, becoming brown to dark lead-grey, white from above and below; maxillary palp white to creamy white, dark brown ringed at base of last segment, terminal part white; antenna creamy white, from about the middle inconspicuous darkly ringed. Thorax creamy white to light brown; patagia creamy white with two broad longitudinal brown stripes; tegulae creamy white with dark patch in the middle. Forewing, groundcolour white densely suffused with ochreous to dark brown scales, anterior area with dark brown spot of various size near medial fascia, posterior area with dark brown spot in middle; medial fascia single, clearly angled under costa, not broadening at inner margin, running to one-third of the dorsum; subterminal line ochreous brown, about midway between terminal dots and termination of posterior area; area adjacent to terminal dots white to yellow; eight or nine black terminal dots, formula 2-2-3-1 or 2-2-3-2; fringes shiny, creamy white with three brown lines. Hindwing light brown, subterminal fascia present, termen darkly bordered; fringes creamy white with brownish line.

Tergite VIII (fig. 86). – Sclerite strongly sclerotized, posterior part small, rectangular, stalk long, slender, anterior part clearly visible, narrow, rectangular.

Male genitalia (fig. 137). – Uncus rather broad, clearly bent, big dorsal thorn at two-fifth of pointed tip; gnathos longer, broad dorsal thorn elongated, terminal part short; tegumen with very small appendix angularis; sacculus narrow, processus of sacculus slender reaching to about the end of cucullus, processus basalis broad at base tapering soon, bent inward, strongly sclerotized, processus inferior valvae slightly pointing inward, cucullus very slender, nearly straight; juxta broad; vinculum with small basal projections; aedeagus small, tapering ventral and dorsally posterior of anellus connection, one patch of minute cornuti.

Female genitalia (fig. 187). – Papillae anales normal; membrane of tergite VIII with broad triangular sclerotized patch; ostium rounded at top, heavily sclerotized; ductus bursae lightly sclerotized, widening proximal; ductus seminalis narrow; bursa copulatrix large, roundish, small signum without, larger signum with median ridge.

Biology. – Unknown. The two specimens were caught at the end of June.

Distribution (fig. 87). – One of the rarest species of *Euchromius*, only known from North East Sudan.

Remarks. – In his original description Bleszynski (1965a: 79) mingled the external characters of the male and female of *E. sudanellus* and *E. subcambridgei* concerning the medial fascia. Only in *E. subcambridgei* the medial fascia is dilating at the inner margin and not in *E. sudanellus* as stated by Bleszynski. Bleszynski (1965b: 1-4) depicts the female genitalia of *E. sudanellus* with the legends of *E. subcambridgei* and vice versa.

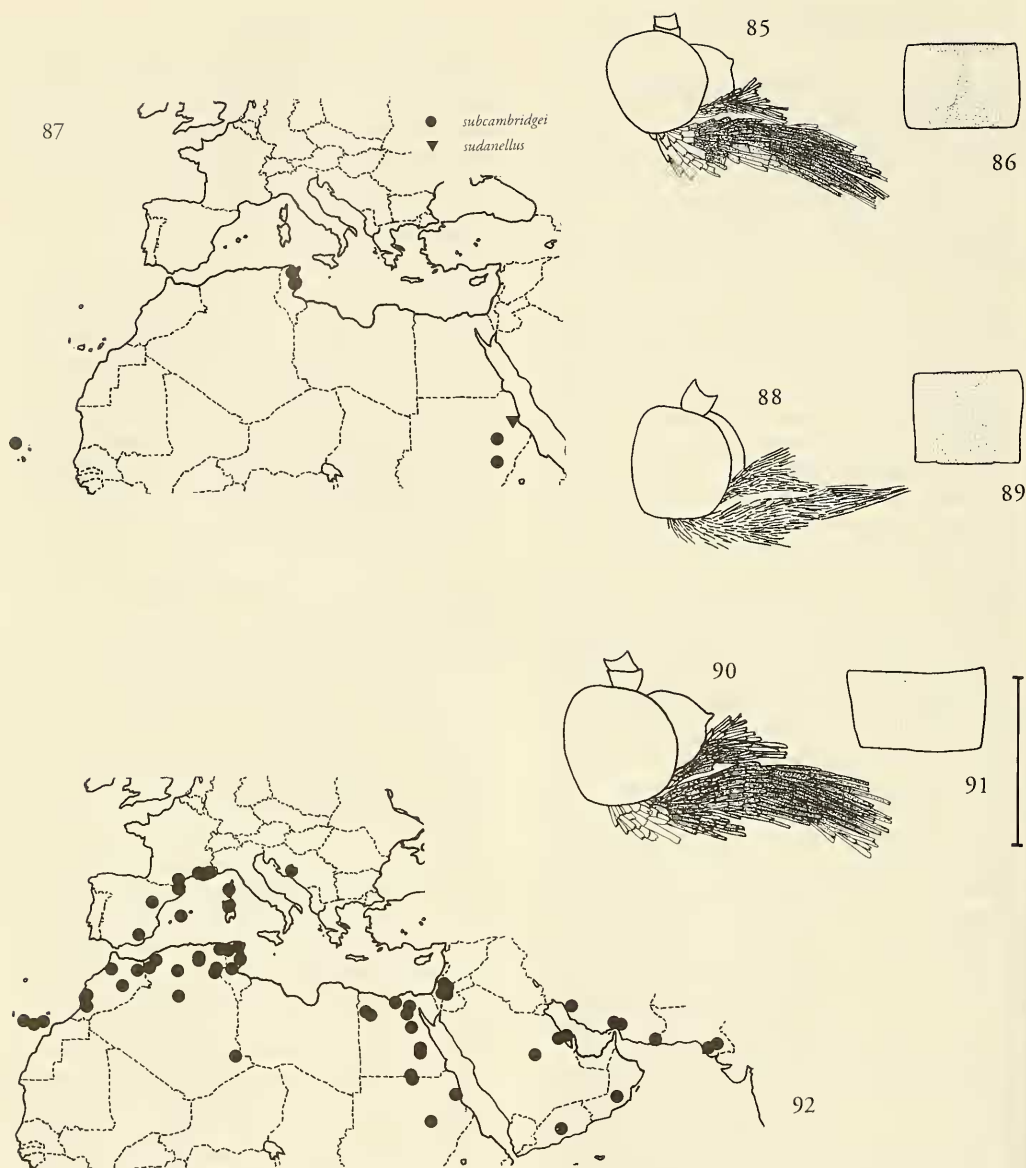
37. *Euchromius subcambridgei* Bleszynski, 1965  
(figs. 87-89, 138, 188)

*Euchromius subcambridgei* Bleszynski, 1965a: 78. Holotype: ♂, 'Sudan Ed Damer Hudeiba 29.V.1962 leg R. Remane', GS 1315 (ZSMC) [examined].

Material. – 14 ♂, 20 ♀. Cape Verde: St. Vincent, 1 ♂ (BMNH). Sudan: Hudeiba, 1 ♀ (BMNH), 2 ♂, 1 ♀ (ZSMC). Tunisia: Sfax, 8 ♂, 12 ♀ (BMNH), 1 ♀ (CUIC), 2 ♂, 4 ♀ (RTAS), 1 ♂, 1 ♀ (ZFMK).

Diagnosis. – Externally very similar to *E. cambridgei* and *E. labellum*. Differs from these species in having the medial fascia not sharply bent, and the angle in the middle of the forewing and the fascia broadening at the inner margin.

External characters male, female (fig. 88). – Wingspan 14-15 mm. Frons produced forward, rounded without point, creamy white, darker in centre, no ventral ridge; vertex creamy white; labial palp two to two and a half, sides white at base, becoming light brown, creamy white from above and below; maxillary palp light brown, dark ringed at base of last segment, terminal part white; antenna creamy white, from about the middle inconspicuous darkly ringed. Thorax creamy white to light brown; patagia creamy white with two broad longitudinal brown stripes; tegulae creamy white with dark patch in the middle. Forewing, groundcolour white densely suffused with ochreous to dark brown scales, anterior area with dark brown basal patch; medial fascia single, clearly angled in middle of wing, broadening at inner margin, running to one-third of the dorsum; subterminal line ochreous brown, about midway between terminal dots and termination of posterior area; area adjacent



Figs. 85-92. *Euchromius* species. – 85, *E. sudanellus*, head, lateral aspect, scales removed; 86, idem, sclerite of tergite VIII; 87, distribution map of *E. sudanellus* and *E. subcambridgei*; 88, *E. subcambridgei*, head, lateral aspect, scales removed; 89, idem, sclerite of tergite VIII; 90, *E. cambridgei*, head, lateral aspect, scales removed; 91, idem, sclerite of tergite VIII; 92, idem, distribution map. Scale bar 0.5 mm to figs. 85-86, 88-89, 90-91.

to terminal dots white to yellow; six or seven black terminal dots, formula 2-3-1 or 2-3-2; fringes shiny, evenly yellowish. Hindwing creamy white to brown-grey, subterminal fascia present, termen darkly bor-

dered; fringes white with brownish line.

Tergite VIII (fig. 89). – Sclerite clearly visible, posterior part more or less square, anterior part smaller, with two rounded caudal pointing tips, stalk normal.



Male genitalia (fig. 138). — Uncus slender, slightly bent, tapering to sharp pointed tip; gnathos longer, slender, dorsal thorns normal sized, terminal part long, lightly sclerotized; tegumen with clearly visible appendix angularis; sacculus normal, processus of sacculus slender, bent, reaching to three-fifth of cucullus, processus basalis broad at base tapering soon, tips bent inward, strongly sclerotized, processus inferior valvae slightly pointing inward, cucullus normal sized, bent upward; juxta normal; vinculum angled; aedeagus small, relatively broad, tapering ventral, tip overhanging, one large patch of minute cornuti containing one larger cornutus.

Female genitalia (fig. 188). — Papillae anales small; membrane of tergite VIII with small triangular medium sclerotized spot; ostium straight at top, strongly sclerotized, lamella antevaginalis shield-like, split in the middle; ductus bursae moderately broad; ductus seminalis broad at base; bursa copulatrix large, elongated, two round signa, one small other normal sized.

Biology. — In Tunisia this species flies from half June to half October with a peak in August-September. In Sudan it has been caught in the end of May, August and November. On the Cape Verde Islands it was caught in August.

Distribution (fig. 87). — A rather disjunct distribution, Cape Verde Islands, Tunisia and the Sudan.

Remarks. — See under *E. sudanellus*.

### 38. *Euchromius cambridgei* (Zeller, 1867)

(figs. 9, 90-92, 139, 189)

*Eromene cambridgei* Zeller, 1867: 370. Holotype: ♂, 'Egypte O.P.C. 1864', GS 5653 (BMNH) [examined].

*Eromene luciella* Chrétien, 1907: 178. Lectotype: ♂ (designated by Bleszynski (1965a: 77)), 'Ste Lucie Aude France 8.7.86', GS 3646 (MNHN) [examined].

*Argyria prototypa* Meyrick, 1935: 571. Holotype: ♂, 'Ksar el Souk Morocco R.12.5.33', GS 5668 (BMNH) [examined].

*Ommatopteryx congruentella* Amsel, 1958a: 64. Holotype: ♂, 'Dhahran 24.8.57 A.S. Talhouk coll.', GS 3325 (LNKD) [examined].

*Ommatopteryx szijjartoi* Gozmany, 1959: 364. Holotype: ♀, 'Idfu, Egypt 28.x.1957 Exc. Egypt. Mus. Nat. Hung. leg. Dr. Gozmany', GS 1002 (HNHM) [examined].

*Ommatopteryx ilkui* Gozmany, 1959: 366. Holotype: ♀, 'Komosin, Egypt Distr. Fayum 9.x.1957 Exc. Egypt. Mus. Nat. Hung. leg. Dr. Gozmany', GS 1003 (HNHM) [examined].

Material. — 207 ♂, 169 ♀. Algeria: Biskra, 5 ♂, 4 ♀ (BMNH), 1 ♂ (INER), 4 ♂, 1 ♀ (MNHN); Djanet, 1 ♂ (BMNH); El Golea, 1 ♀ (INER), 6 ♂, 8 ♀ (MNHN), 2 ♂ (ISNB), 2 ♂ (ZSMC); El Kantara, 1 ♂ (BMNH); Hammam-es-Salahim, 1 ♂ (BMNH); Laghouat, 2 ♂, 2 ♀ (MNHN); Le Tarf, 1 ♂, 3 ♀ (MNHN); Sebdu, 1 ♂ (BMNH); Sidi-bel-Abbes, 1 ♂ (BMNH), 1 ♂ (MNHN). Bahrain: Al Jupair, 1 ♂ (ZMUC); Manama, 5 ♂ (BMNH). Egypt: Aswan, 3 ♂, 2 ♀ (BMNH); Cairo, 2 ♂, 2 ♀ (NHMW), 1 ♀ (MNHN); Idfu, 1 ♂

(HNHM); Komosin, 1 ♀ (BMNH), 1 ♀ (HNHM), 1 ♂ (ISNB); Minyeh, 1 ♂ (BMNH); Niltakarakt, 2 ♂, 2 ♀ (NHMW); Maryut, 2 ♂ (BMNH), 1 ♂ (LNKD); Sids, 1 ♂ (HNHM); Siwa, 4 ♀ (BMNH); Zeitoun, 1 ♂, 4 ♀ (BMNH). France: Bastia, 2 ♂ (LNKD); Boulouris, 1 ♂ (MNHN); Camarque, 1 ♂ (BMNH), 1 ♀ (HUIS), 1 ♂, 1 ♀ (LNKD), 1 ♂ (ZMFK); Cannes, 1 ♂ (MNHN); Le Canet, 1 ♀ (BMNH); Les Carbonnes de Fleurs, 5 km N. of Narbonne, 4 ♂, 1 ♀ (HUIS); Pinarello, 4 ♂, 4 ♀ (IZUI); Sole Nзара, 1 ♂ (IZUI); St. Lucie, 2 ♂, 1 ♀ (MNHN); Tour de Vignale, 1 ♂ (IZUI). Iran: Bander Abbas, 5 ♂, 2 ♀ (NHMW); 30 km E of Bander Abbas, 2 ♂, 1 ♀ (NHMW); Bender Tchahbahar, 1 ♀ (NHRS); Dalaki, 2 ♀ (LNKD); 35km N. of Minab, 1 ♂ (LNKD); street Bander Abbas-Sirjan, 1 ♂, 1 ♀ (LNKD). Israel: Dead Sea, 1 ♀ (BMNH); Deganya, 2 ♂ (GORD); Sedom, 6 ♂, 1 ♀ (BMNH); South end Dead Sea, 1 ♂ (INER), 1 ♂, 1 ♀ (LNKD), 1 ♂, 1 ♀ (MNHN), 1 ♀ (NHMW), 1 ♀ (MHNG), 3 ♀ (ZSMC). Italy: Siniscola, 2 ♂ (LNKD). Jordan: Fühes, 1 ♀ (LNKD); Karak, 1 ♀ (LNKD); Zarqa, 1 ♂, 2 ♀ (BMNH). Morocco: Aôf Melloul, 2 ♂ (MNHN); Ksar el Souk, 1 ♂ (BMNH); Mehedy, 1 ♂ (MNHN); Si Aebal Tazi, 1 ♀ (MNHN); Taourirt, 1 ♂ (BMNH). Oman: Jiddat al Harasis, 1 ♂, 1 ♀ (BMNH). Pakistan: Hydrarabad, 3 ♀ (BMNH); Karachi, 1 ♂ (BMNH), 1 ♀ (LNKD), 1 ♂, 1 ♀ (MNHN), 1 ♀ (NHMW). Saudi Arabia: Dhahran, 1 ♂ (LNKD); Riad, 3 ♀ (LNKD). Spain: Bajarar, 3 ♂ (BMNH); Cruz, 1 ♂ (NHMW); El Medano, 1 ♀ (LNKD); Fuerteventura, 1 ♂, 1 ♀ (ZMFK); Hildago, 1 ♀ (LNKD), 1 ♂, 1 ♀ (MNMS); La Escala, 2 ♂ (LNKD); Las Palma, 1 ♀ (NHMW); Maspalomas, 1 ♀ (LNKD), 2 ♂ (NHMW); Palma, 1 ♀ (NHMW); Port Orotava, 1 ♀ (BMNH), 1 ♂ (RMNH); Rio de Baza, 1 ♂ (ZMUC); Rosas, 2 ♂ (ZSMC); Sta. Cruz, 3 ♂, 2 ♀ (BMNH); Tafira, 1 ♂ (MNHN); Tejina, 1 ♂ (MNMS); Zaragosa, 1 ♀ (MNHN). South Yemen: Wadi Mascila, 1 ♀ (BMNH). Sudan: Ed Damer, 6 ♂, 11 ♀ (ZSMC); Faras, 1 ♀ (NHMW); Wadi Halfa, 1 ♂, 1 ♀ (BMNH), 1 ♂, 1 ♀ (NHMW); Toshka, 1 ♂, 1 ♀ (NHMW). Tunisia: Ain Draham, 1 ♂ (ZMUC); Bou-Hedna, 1 ♂ (INER); El Gouina, 2 ♂ (ZSMC); Gafou, 1 ♂ (MNHN); Metlaoui, 1 ♂ (MNHN); Sfax, 50 ♂, 55 ♀ (BMNH), 1 ♂ (CASC), 1 ♀ (CUIC), 5 ♂, 4 ♀ (HNHM), 5 ♂ (ISNB), 1 ♂ (LNKD), 10 ♂, 7 ♀ (MNHN); Tozeur, 1 ♂ (MNHN). Yugoslavia: Spalato, 1 ♀ (BMNH), 1 ♀ (NHMW).

Diagnosis. — Externally very similar to *E. sudanellus*, *E. subcambridgei* and *E. labellum*. Differs from the last two species by a small point on the frons. In male genitalia *E. cambridgei* can be distinguished from *E. sudanellus* in lacking the dorsal thorn on the uncus. The female genitalia have two equally sized signa and two very small slender sclerotized plates at the ventral site of the membrane of tergite VIII. The signa are unequal in size in *E. sudanellus* and the single plate at the ventral part of membrane of tergite VIII is triangular.

External characters male, female (figs. 9, 90). — Wingspan 12-17 mm. Frons produced forward with small point, creamy white to light brown, more dark in centre, no ventral ridge; vertex creamy white to light brown; labial palp two and a half, sides white to creamy white at base, becoming creamy white to brown, white from above and below; maxillary palp white to creamy white, darker ringed at base of last segment; antenna creamy white, ringed grey. Thorax

light brown to brown; patagia light brown to brown with two very inconspicuous longitudinal brown stripes; tegulae light brown to brown with a not to clear dark patch in the middle. Forewing, ground-colour creamy white densely suffused with ochreous to dark brown scales, anterior area usually with dark brown streak, in dark specimens anterior area entirely dark brown, posterior area usually with dark brown streak and a yellowish to dark brown spot, in dark specimens posterior area entirely dark brown, also very light specimens occur; medial fascia single, clearly angled under costa, not broadening at inner margin, running to halfway of the dorsum; subterminal line ochreous brown sometimes only faintly visible, about midway between terminal dots and termination of posterior area; area adjacent to terminal dots white to yellow; eight to four black terminal dots, group three usually present; fringes shiny, creamy white to yellow-brown, sometimes with, not clearly separated, darker lines. Hindwing grey to light brown, subterminal fascia present, termen darkly bordered; fringes creamy white with brownish line.

Tergite VIII (fig. 91). — Sclerite normally sclerotized, posterior part broad, rounded, faint, stalk faint, short, anterior part very faint and narrow.

Male genitalia (fig. 139). — Uncus tapering to sharply pointed tip, inconspicuous dorsal crest present; gnathos longer, two small dorsal thorns, terminal part short; tegumen without appendix angularis; sacculus broad, processus of sacculus slender, slightly bent upward, reaching to circa three-fifth of cucullus, processus basalis slender, sharply bent, processus inferior valvae small, flattened, cucullus normal, more or less bent upward; juxta triangular; vinculum normal; aedeagus small, one group of cornuti.

Female genitalia (fig. 189). — Papillae anales normal; membrane of tergite VIII with collar-like sclerotization, edges of tergite VIII not connected; ostium small; ductus bursae normal; ductus seminalis narrow; bursa copulatrix roundish, two long signa.

Biology. — Recorded from inland-dune landscape mixed with salt-areas (Amsel, 1958). Flies in Spain, France, Italy, Yugoslavia, Tunisia, Algeria and Morocco in two more or less continuous generations from April until November with peaks in April-May and September-October. On the Canary Islands it is also present in November up to April. In Pakistan, Iran, Oman, South Yemen, Saudi Arabia, Jordan, Israel, Egypt and Sudan it has been caught throughout the year, with peaks in February-May and October-November.

Distribution (fig. 92). — Spain, France, Italy, Yugoslavia, Iran, Pakistan, Bahrain, Oman, South Yemen, Saudi Arabia, Jordan, Israel, Egypt, Sudan, Tunisia, Algeria and Morocco.

Remarks. — Most variable species in the genus, in

size as well as in colour. The darkest coloured specimens occur on the Canary Islands and in the West-Mediterranean countries. The palest and smallest specimens are found in Iran.

### 39. *Euchromius viettei* Bleszynski, 1961 (figs. 93, 140, 141, 190)

*Euchromius viettei* Bleszynski, 1961: 455. Holotype: ♂, 'Arabia: Hejaz, Jidda. 22.XI.1926 H. St. J. B. Philby', GS 5091 (BMNH) [examined]. Schouten (1988: 24) [redescription].

*Euchromius karsholti* Ganey, 1987: 44. Holotype: ♂, 'Saudi Arabia FEB 1980 Djidda, Northern Creek U. Seneka Nielsen leg.', GS 968 (ZMUC) [examined]. syn. n.

Material. — 10 ♂, 4 ♀. Chad: Binni Erdi, 4 ♂, 2 ♀ (BMNH). Oman: Khubayt, 1 ♂ (BMNH); Qurm, 1 ♂ (BMNH). Saudi Arabia: Burayman, 1 ♂, (BMNH); Djidda, 1 ♀ (ZMUC); Hejaz, 3 ♂, 1 ♀ (BMNH).

Diagnosis. — Difficult to distinguish externally from other species with a single medial fascia. Differs in male genitalia in having the processus of sacculus forming a heavily spined lobe in combination with the processus basalis broad at base, narrowing very abruptly. Differs in female genitalia in a roundish bursa copulatrix with one round signum in combination with edges of tergite VIII connected forming a minute projection and having the lamella postvaginalis rectangular.

Biology. — Unknown. Specimens caught in February, November and December in Saudi Arabia and Oman, in August in Chad.

Distribution (fig. 93). — Occurs in the Saudian Peninsula and the Tibesti Mountains of Chad.

Remarks. — Ganey (1987: 44) describes the species *Euchromius karsholti* based on a single female from Saudi Arabia. In the diagnosis he gives no distinct differences between *E. viettei* Bleszynski, 1961 and *karsholti*. He only states: 'VIII. tergite very complicated, however differing from those of *Euchromius hampsoni* and *Euchromius viettei*'. The quality of the drawing of the female genitalia is too poor to make any statement on the degree of difference between the species concerned. Study of the holotypes proved no differences between *E. karsholti* Ganey, 1987 and *E. viettei* Bleszynski, 1961. *E. karsholti* Ganey, 1987 is therefore a junior synonym of *E. viettei* Bleszynski, 1961.

### 40. *Euchromius hampsoni* (Rothschild, 1921) (figs. 143, 191)

*Ommatopteryx hampsoni* Rothschild, 1921: 220. Holotype: ♂, 'Azal N. of Agades 13. July 20. (A. Buchanan)', GS 5676 (BMNH) [examined]. Schouten (1988: 25) [redescription].

Material. – 1 ♂, 1 ♀.

Diagnosis. – Difficult to distinguish externally from other species with a single medial fascia. Differs in male genitalia in having the processus of sacculus forming a heavily spined lobe in combination with the processus basalis broad at base, narrowing gradually. Differs in female genitalia in a roundish bursa copulatrix with one round signum in combination with lamella postvaginalis square, lamella antevaginalis with clear anterior fold.

Distribution. – Niger.

41. *Euchromius klimeschi* Bleszynski, 1961  
(figs. 142, 192)

*Euchromius klimeschi* Bleszynski, 1961: 467. Holotype: ♂, 'Natal Weenen 1-iii-1927 H. P. Thomasset', GS 5096 (BMNH) [examined]. Schouten (1988: 14) [redescription].

Material. – 14 ♂, 30 ♀.

Diagnosis. – Differs from all other species by a rounded frons without a point, a single medial fascia, six or seven black terminal dots and a white area adjacent to terminal dots.

Distribution. – Ethiopia, Somalia, Kenya, Tanzania, Zaire, Zambia, Zimbabwe, Madagascar, Mozambique, South Africa, Namibia and Burkina Faso [=Upper Volta]. B. Landry collected the first specimen for West Africa in Burkina Faso: Kompienbiga, 15 km W. of Pama, 5-13.VIII.1988 (LAND).

Remark. – Due to an incorrectly positioned female genitalia the ductus seminalis was wrongly interpreted and recorded as narrow (Schouten 1988). In contrast to this the ductus seminalis starts broad and narrows soon, the sclerotized ring starts in the broad part of the ductus seminalis.

42. *Euchromius discopsis* (Hampson, 1919)  
(figs. 144, 193)

*Ommatopteryx discopsis* Hampson, 1919: 534. Holotype: ♀, 'Transvaal 1907-122 Pretoria 21.10.06 A. J. T. Janse II' GS 7049 (BMNH) [examined].

*Euchromius discopsis* (Hampson, 1919). Schouten (1988: 16) [redescription].

Material. – 23 ♂, 24 ♀.

Diagnosis. – Difficult to distinguish from other species with eight or nine black terminal dots and a single medial fascia. Differs from these species in male genitalia in having the processus of sacculus long and slender, nearly reaching the end of the cucullus, a

dorsal spike at base of the processus. Differs in female genitalia in having a tooth-shaped ostium in combination with a oblong bursa copulatrix with one faint signum.

Distribution. – Zimbabwe, Botswana, South Africa and Namibia.

43. *Euchromius labellum* Schouten, 1988  
(figs. 9, 146, 196)

*Euchromius labellum* Schouten, 1988: 17. Holotype: ♀, 'Afrika Kenya Samburu Game Reserve, Lodge 15.2.1975 LF leg. D. Buckh.', GS 393 (MHNG) [examined].

Material. – 8 ♂, 6 ♀.

Diagnosis. – Differs from most species in having the single medial fascia angled under the costa. Differs in male genitalia in having a lip-shaped bilobed uncus. Differs in female genitalia in having a broad tongue-shaped ostium in combination with a roundish bursa copulatrix with one signum and a broadly starting ductus seminalis which narrows soon.

Biology. – The author collected material of this species in Samburu National Park. The specimens were caught at 925 m altitude, approximately 50 m from the river, in an area with scattered *Acacia* spp. trees with some shrubs and patches of grass.

Distribution. – Kenya.

44. *Euchromius aris* Schouten, 1988  
(figs. 145, 195)

*Euchromius aris* Schouten, 1988: 22. Holotype: ♂, 'Samburu Res. KENYA 2800' 6 March '86 R. Leuchner', GS 420 (LACM) [examined].

Material. – 10 ♂, 20 ♀.

Diagnosis. – Difficult to separate from species with a single medial fascia and nine (or eight) black terminal dots and a bluntly produced rounded frons. Differs from these species in male genitalia in having a gnathos without a terminal part in combination with a slender, sharply pointed cucullus and a aedeagus with one group of cornuti. Differs in female genitalia in having the bursa copulatrix with two rounded signa in combination with a small dorsally bent lip-shaped projection and the lamella postvaginalis square.

Distribution. – Kenya.

45. *Euchromius erum* Schouten, 1988  
(figs. 147, 196)



*Euchromius erum* Schouten, 1988: 21. Holotype: ♀, 'Kenya: 5 mi NE Kargi Marsabit District elev. ca 1500 feet 28 Jan.-3 Feb. 1973 Julian Donahue', GS 365 (LACM) [examined].

Material. – 3 ♂, 11 ♀.

Diagnosis. – Difficult to separate from species with a single medial fascia and a bluntly projecting rounded frons. Differs from these species in male genitalia in lacking the two dorsal thorns of the gnathos and the appendix angularis in combination the presents of heavy spines on the valvae. Differs in female genitalia by the upper two-third of the ductus bursae being evenly sclerotized by small spots.

Biology. – See under *E. labellum*.

Distribution. – Ethiopia and Kenya.

#### 46. *Euchromius locustus* Schouten, 1988 (figs. 148, 197)

*Euchromius locustus* Schouten, 1988: 18. Holotype: ♀, 'Zambia Mbala 3-8.x.1974 Locust Cont. Ctr. BM.1975-92.', GS 12986 (BMNH) [examined].

Material. – 2 ♂, 4 ♀.

Diagnosis. – Difficult to separate from species with a single medial fascia and a bluntly projecting rounded frons and nine (or eight) black terminal dots. Differs from these species in male genitalia in having a broad, triangular appendix angularis in combination with the absence of the two dorsal thorns of the gnathos.

Distribution. – Tanzania, Zaire and Zambia.

#### 47. *Euchromius nigrobasalis* Schouten, 1988 (figs. 149, 198)

*Euchromius nigrobasalis* Schouten, 1988: 20. Holotype: ♂, 'Pretoria 11.x.1958 L. Vari', GS 155 (TMSA) [examined].

Material. – 3 ♂, 4 ♀.

Diagnosis. – Differs from all other species in having a broad single medial fascia which is sprinkled with black scales giving it a fingerprint impression.

Distribution. – Zimbabwe and South Africa.

#### *Miyakea* Marumo, 1933

*Miyakea* Marumo, 1933: 48. Type species: *Eromene expansa* Butler, 1881: 590, by monotypy.

The genus *Miyakea* was described by Marumo in 1933 to accommodate *Eromene expansa* Butler, 1810. Caradja (1910) described a new form of *Eromene bel-*

*la* (= *Euchromius bellus*) from Russia: Radde and named it *raddeellus*. Bleszynski & Collins (1962) made it a synonym of *M. expansa* (Butler, 1881). The third species has only recently been described from Taiwan: *Euchromius lushanus* Inoue, 1989. It is now transferred to *Miyakea*. The female genitalia of *M. expansa* are depicted and described for the first time. *M. sinevi* sp. n. is described from Mongolia.

#### Diagnosis of *Miyakea*

Ductus ejaculatorius enters the aedeagus terminally; dorsal thorns on the gnathos absent; tergite VIII without sclerotized pattern; frons projecting or not; M1 of hindwing located in the lower part of the more or less closed cell; base of M2 and M3 of hindwing with a basal pointing vein, more or less closing the cell (fig. 10); spinula not visible.

#### Morphology

Head. The frons has no diagnostic characters at species level, it is projection or not, without point, creamy white to brown without a ventral ridge. The relative size of the labial palp compared to the eye diameter can be used to separate the species. The antennae are serrate in males and setaceous in females. The scales on the antenna are creamy white, sometimes inconspicuous darkly ringed.

Thorax. Thorax uniformly coloured, creamy white to brown. Patagia light brown to brown. Tegulae creamy white with a dark patch in the middle.

Venation (fig. 10). Very similar to that of the genus *Euchromius*. The differences with the latter genus are listed under 'Diagnosis'.

Wing pattern. The ground-plan of the pattern is similar to that of *Euchromius* (fig. 7), but there are no species with a single medial fascia. The formula of the black terminal dots usually offers a good character to distinguish the species. The position of the double medial at the costa is in some cases diagnostic.

Genitalia. The male genitalia offer excellent diagnostic characters. The uncus is rather uniform, slender and tapering to a sharply pointed tip. The gnathos is of equal length, the tip is minutely dentate. The sacculus is reduced to absent. The processus basalis is reduced to very prominent. The costal edge of the valvae forming a prominent projection or not, the cucullus is truncate. Processus inferior valvae inconspicuous to absent. Juxta small, rounded. Vinculum long. Aedeagus highly diagnostic, usually with cornuti. Female genitalia, papillae anales uniformly small. Ostium armed with variously shaped projections. Ductus bursae short, with or without a pouch-like enlargement under the ostium. Ductus seminalis always narrow. Bursa copulatrix oblong without signa.

### Intraspecific variation

The intraspecific variation of *Miyakea* is limited, the male genitalia in *raddeellus* show some variation.

### Tympanal organs

In *Miyakea* the tympanal organs are similar to those of *Euchromius*, but the spinula on the tympanum is not sclerotized.

### Distribution

The four species are confined to Asia, China, Taiwan and Japan. *M. expansa* is endemic to Japan, *lushanus* is endemic to Taiwan. *M. sinevi* has been found in Mongolia. *M. raddeellus* has the most extensive distribution, occurring in China, Russia and Korea.

### Biology

Unknown. *Raddeellus* has been caught at an altitude of 1800 m.

### Checklist of extant *Miyakea* Marumo

1. *lushanus* (Inoue, 1989)
2. *raddeellus* (Caradja, 1910)
3. *expansa* (Butler, 1881)
4. *sinevi* sp. n.

#### 1. *Miyakea lushanus* (Inoue, 1989) comb. n. (figs. 94, 95, 118, 169)

*Euchromius lushanus* Inoue, 1989: 2. Holotype: ♂, 'Lushan Nantou Formosa 29.VII.1973 Y. Shibata', GS 13229 (INOUE) [examined].

Material. – 1 ♂, 1 ♀. Taiwan: Nantou, 1 ♂, 1 ♀ (INOUE).

Diagnosis. – Differs from *M. sinevi* by the present of a group of three black terminal black dots. Differs from *M. expansa* in not having the medial fascia connected with the yellow apical marking. Differs from *M. raddeellus* in male genitalia lacking the processus basalis, in female genitalia in lacking the tongue-shaped projection of the ostium.

External characters male, female (fig. 94). – Wingspan 20–26 mm. Frons produced forward, rounded without point, light brown to creamy white, no ventral ridge; vertex creamy white, light brown in the middle; labial palp three, creamy white at base, very soon brown, becoming brown lead-grey, brown from above, creamy white from below; maxillary palp brown, terminal part creamy white; antenna creamy white. Thorax brown; patagia light brown to brown; tegulae creamy white with brown patch in middle. Forewing, groundcolour creamy white densely suffused with ochreous to dark brown scales, costa of an-

terior area brown; medial fascia double slightly arched, running to one-fourth of the dorsum; subterminal line brown, about midway between terminal dots and termination of posterior area; area adjacent to terminal dots yellow to white; seven black terminal dots, formula 2-3-2; fringes shiny, evenly lead-grey. Hindwing grey-brown, subterminal fascia present, termen darkly bordered; fringes creamy white.

Male genitalia (fig. 118). – Uncus normal; gnathos equal in length tip minutely dentate, dorsal thorns absent; tegumen slender, appendix angularis absent; sacculus inconspicuous, processus of sacculus absent, processus basalis reduced to elongated rim, processus inferior valvae absent, cucullus slightly concave, blunt; juxta roundish; vinculum elongated; aedeagus curved, no cornuti.

Female genitalia (fig. 169). – Papillae anales small; membrane of tergite VIII without sclerotizations; ostium small with very small low projecting tooth; ductus bursae short with more sclerotized lines; ductus seminalis narrow; bursa copulatrix oblong, signum absent.

Biology. – Unknown. Specimens were caught in July and August at 1200 m altitude.

Distribution (fig. 95). – Taiwan.

Remarks. – *M. lushanus* is the sister species of *raddeellus* and/or *expansa* judging to the male genitalia and falls within the genus diagnosis of the genus *Miyakea*. Leaving this species in *Euchromius* would cause a polyphyletic genus. Therefore *lushanus* is transferred to *Miyakea* Marumo, 1933.

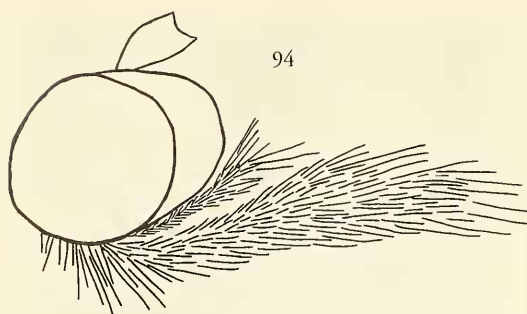
In the original description slide number 13230 is given as belonging to the holotype, but upon checking the type material this turns out to be the female paratype slide number. The holotype slide number is 13229.

#### 2. *Miyakea raddeellus* (Caradja, 1910) sp. rev. (figs. 9, 95, 96, 119, 120, 167)

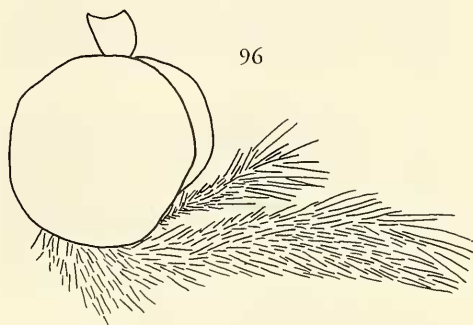
*Eromene bellus* form *raddeella* Caradja, 1910: 115. Lectotype: ♂ (designated by Bleszynski (1965a: 89)), [Russia] 'Radde Amur 1903 Korb'. (MGAB) [not examined].

*Miyakea expansa* sensu Bleszynski & Collins (nec Butler, 1881) 1962: 325 [status nov. for *Eromene bellus* form *raddeellus* Caradja, 1910 and synonymization with *Miyakea expansa* (Butler, 1881)].

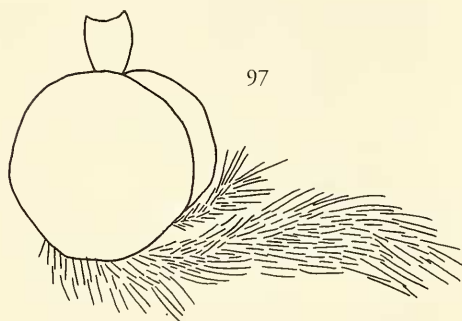
Material. – 10 ♂, 14 ♀. China: Changyang, 1 ♂ (BMNH), 1 ♂ (TMSA); Chung Kiang [=Zhongjiang], 1 ♀ (BMNH); Chung King, 1 ♂, 5 ♀ (BMNH); Foochow [=Fuzhou], 2 ♂, 2 ♀ (BMNH), 1 ♂ (RTAS), 1 ♀ (TMSA); Siang-Yang-Fu [=Xiangfan], 1 ♂ (BMNH); Wenchow [=Wenzhou], 1 ♀ (RTAS), 3 ♂, 3 ♀ (ZFMK). Korea: Ryong Hpieung [locality not found], 1 ♀ (MNHN).



94



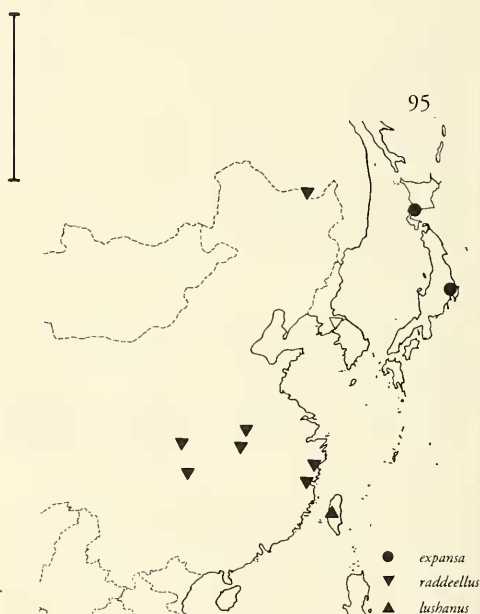
96



97



93



95

Figs. 93-97. *Euchromius* and *Miyakea*. — 93, *E. viettei*, distribution map; 94, *M. lushanus*, head, lateral aspect, scales removed; 95, distribution map of *M. lushanus*, *M. raddeellus*, *M. expansa* and *M. sinevi*; 96, *M. raddeellus*, head, lateral aspect, scales removed; 97, *M. expansa*, head: lateral aspect, scales removed. Scale bar 0.5 mm to figs. 94, 96-97.

Diagnosis. — *M. raddeellus* can be separated from *M. expansa* by a double medial fascia which does not touch the yellow apical marking in combination with seven black terminal dots. Differs from *M. sinevi* in having a group of three black terminal dots. Differs from *M. lushanus* in male genitalia by the presence of a processus basalis, in female genitalia by a tongue-shaped projection of the ostium.

External characters. male, female (figs. 9, 96). — Wingspan 19-28 mm. Frons not produced forward,

rounded without point, light brown, darker in centre, no ventral ridge; vertex light brown; labial palp two, sides creamy white at base, becoming lead-grey, brown from above, light brown from below; maxillary palp light brown, dark brown ringed at base of last segment, terminal part light brown; antenna creamy white. Thorax creamy white to light brown; patagia light brown; tegulae creamy white with dark patch in the middle. Forewing, groundcolour creamy white, densely suffused with ochreous to dark brown



scales, posterior area with, sometimes inconspicuous, spot near medial fascia; medial fascia double, concave to nearly straight, running to one-fourth to one-third of the dorsum; subterminal line ochreous to dark brown, about midway between terminal dots and termination of posterior area; area adjacent to terminal dots white; seven black terminal dots, formula 2-3-2; fringes highly shiny, evenly grey. Hindwing creamy white to light brown, subterminal fascia usually clearly present, termen darkly bordered; fringes creamy white with faint brownish line.

Male genitalia (figs. 119, 120). – Uncus slender, tapering to sharply pointed tip; gnathos equal in length, tip minutely dentate, dorsal thorns absent; tegumen slender, appendix angularis absent; sacculus inconspicuous, narrow, processus of sacculus absent, processus basalis large, broad, various in length, tip elongated, bent inward, second strongly sclerotized projection with dentated dorsal edge formed by costal edge of valvae, reaching beyond cucullus, processus inferior valvae small, inconspicuous, cucullus broad, ending truncate; juxta small, rounded, fringed with hairy membrane; vinculum long, elongated; aedeagus large with three to five cornuti.

Female genitalia (fig. 167). – Papillae anales small; membrane of tergite VIII without sclerotizations; ostium with bifurcate projection, projection covered with minute spines; ductus bursae short, broad, strongly sclerotized in upper part, armed with small spines; ductus seminalis narrow; bursa copulatrix large, oblong, no signa.

Biology. – Unknown. This species has been caught in April, May, June, July and September. Altitude mentioned: 1800 m.

Distribution (fig. 95). – China, Korea and USSR.

Remarks. – All previous literature concerning material of *Miyakea expansa* outside Japan refers to *M. raddeellus* or *M. lushanus*. The type material of this species could not be studied since the collections in Bucarest were closed for research during my visit to the museum.

### 3. *Miyakea expansa* (Butler, 1881)

(figs. 9, 95, 97, 121, 168)

*Eromene expansa* Butler, 1881: 590. Lectotype: ♀ (designated by Bleszynski (1965a: 89)), 'Tokei 80.97', GS 18213 (BMNH) [examined].

*Miyakea expansa* (Butler, 1881) Marumo (1933: 49).

*Euchromius expansa* (Butler, 1881) Inoue (1982: 225).

*Miyakea raddeellus* sensu Bleszynski & Collins (1962: 325) (nec Caradja, 1910).

Material. – 1 ♂, 1 ♀. Japan: Otaru, 1 ♂ (BMNH); Tokei, 1 ♀ (BMNH).

Diagnosis. – *M. expansa* is easily distinguished from all other species by its six black terminal dots in which a group of three dots is present in combination by the outer medial fascia touching the yellow apical marking of the forewing.

External characters male, female (figs. 9, 97). – Wingspan 21–30 mm. Frons not produced forward, rounded without point, light brown to creamy white, no ventral ridge; vertex yellow-brown; labial palp two, sides brown, brown from above, creamy white from below; maxillary palp brown, terminal part creamy white; antenna creamy white, inconspicuous darkly ringed. Thorax light brown; patagia light brown; tegulae creamy white with dark brown patch in the middle. Forewing, groundcolour creamy white densely suffused with ochreous to dark brown scales; medial fascia double, slightly arched, running to one-fourth of the dorsum; subterminal line dark brown, about midway between terminal dots and termination of posterior area; area adjacent to terminal dots yellow to white; six black terminal dots, formula 2-3-1, central dots of group 'three' sometimes very large, nearly double; fringes shiny, evenly lead-grey. Hindwing grey, subterminal fascia present, termen darkly bordered; fringes creamy white.

Male genitalia (fig. 121). – Uncus slender, tapering to pointed tip; gnathos equal in length, tip minutely dentate, dorsal thorns absent; tegumen slender, appendix angularis absent; sacculus narrow, processus of sacculus absent, processus basalis large, swollen in basal half, dorsal edge very roughly dentate, processus inferior valvae small, inconspicuous, cucullus slender ending truncate; juxta normal sized, rounded; vinculum long, elongated; aedeagus relatively large, one elongated group of cornuti.

Female genitalia (fig. 168). – Papillae anales small; membrane of tergite VIII without sclerotizations, edges of tergite VIII free; ostium simple, with tongue-shaped projection; ductus bursae grooved in upper half, small pouch-like enlargement direct under ostium; ductus seminalis narrow; bursa copulatrix oblong, no signa.

Biology. – Unknown. Caught in June.

Distribution (fig. 95). – Japan.

Remarks. – *M. expansa* is restricted to Japan. All references concerning material of the mainland of Asia are most likely to belong to *M. raddeellus*. Bleszynski (1965a) erroneously depicted the female genitalia of *M. raddeellus* and stated it to be those of *expansa*.

### 4. *Miyakea sinevi* sp. n.

(figs. 95, 97a)

Type material. – Holotype: 1 ♀, 'Mongoli', GS R.S. 767 (ZMAS).

Diagnosis. — *M. sinevi* is easily distinguished from all other species by lacking a group of three black terminal dots.

External characters female — Wingspan 20 mm. Frons not produced forward, rounded without point, brown with some creamy white scales, no ventral ridge; vertex creamy white with brown scales; labial palp three, sides brown, brown from above, brown from below; maxillary palp brown; antenna creamy white, inconspicuous darkly ringed. Thorax brown; patagia brown; regulae creamy white with a broad dark brown patch in the middle. Forewing, ground-colour creamy white densely suffused with ochreous to dark brown scales; costal area of anterior part brown; medial fascia double, slightly arched, running to one-fourth of the dorsum; subterminal line dark brown, about midway between terminal dots and termination of posterior area; area adjacent to terminal dots white; eight or seven black terminal dots, formula 2-2-2-2 or 2-2-2-1; fringes shiny, evenly lead-grey. Hindwing grey-brown, subterminal fascia absent; fringes too worn to be described.

Female genitalia (fig. 97a). — Papillae anales small; membrane of tergite VIII without sclerotizations, edges of tergite VIII free; ostium simple, with a broad tongue-shaped projection, under the ostium a pouch with a strong sclerotized part is clearly separated from the ductus bursae; ductus bursae long; ductus seminalis narrow; bursa copulatrix small, no signa.

Biology. — Unknown. Caught in June.

Distribution (fig. 95). — Mongolia.

Etymology. — This species is named in honour of Dr. Sinev of St. Petersburg a highly esteemed specialist of Momphidae.

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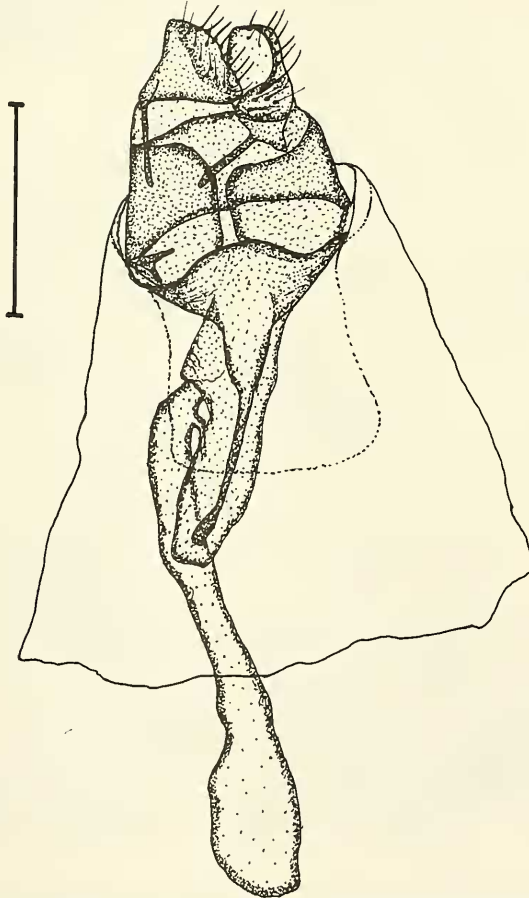
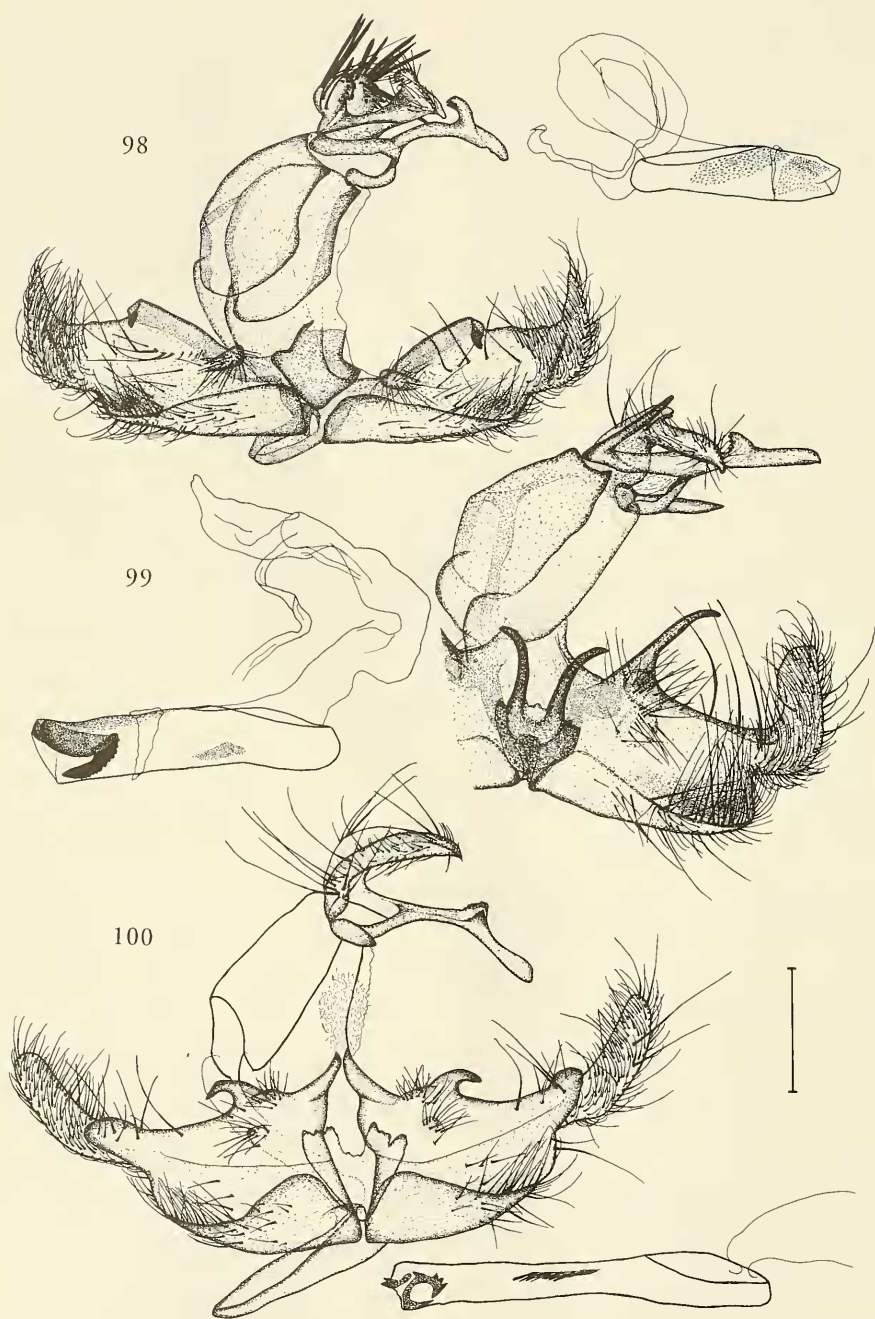
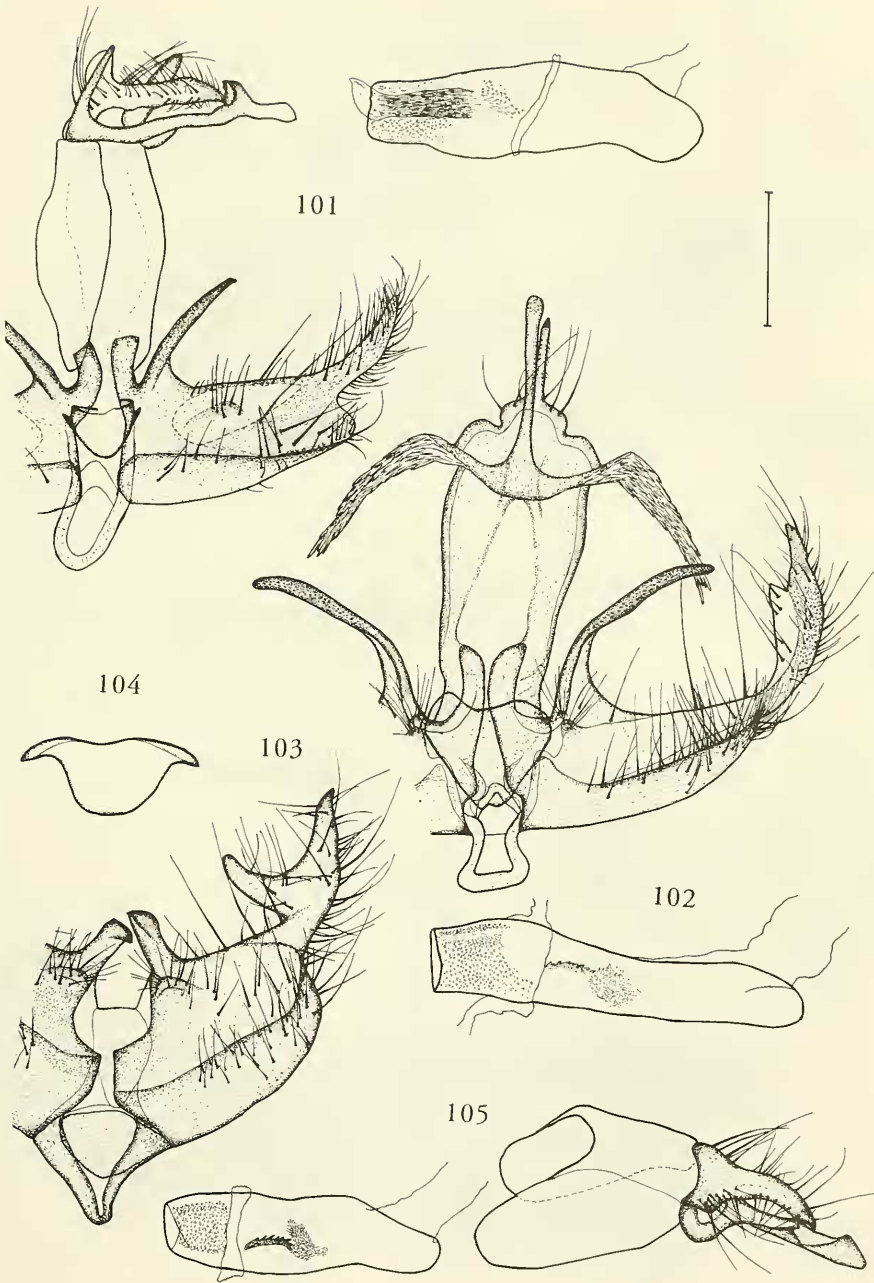


Fig. 97a. Female genitalia; ventral aspect. *Miyakea sinevi*. Scale bar 1 mm.

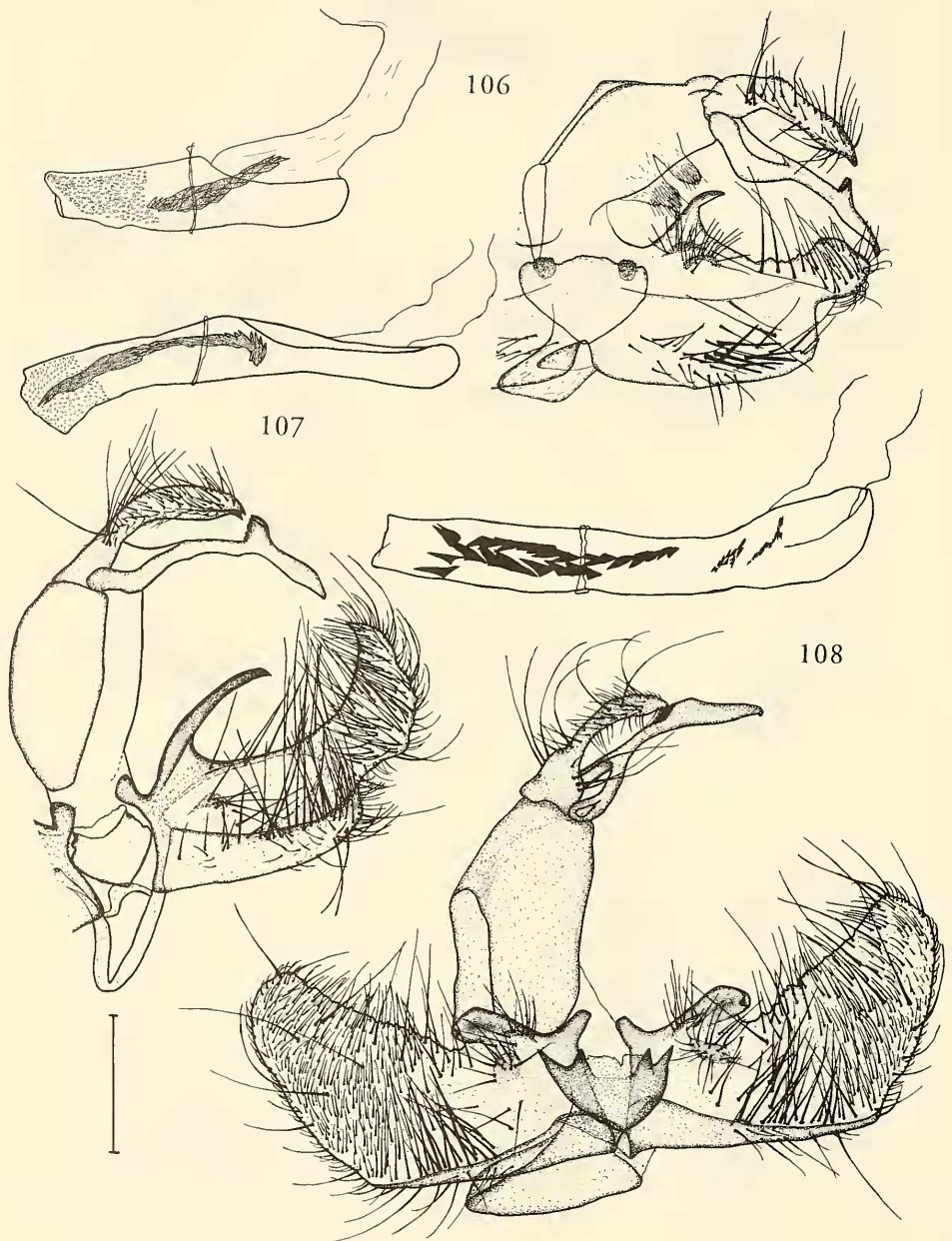


Figs. 98-100. Male genitalia; ventro-caudal aspect, valvae spread; aedeagus separated, lateral aspect. – 98, *Euchromius ornatus*; 99, *Euchromius cornus*; 100, *Euchromius californicalis*. Scale bar 0.5 mm.

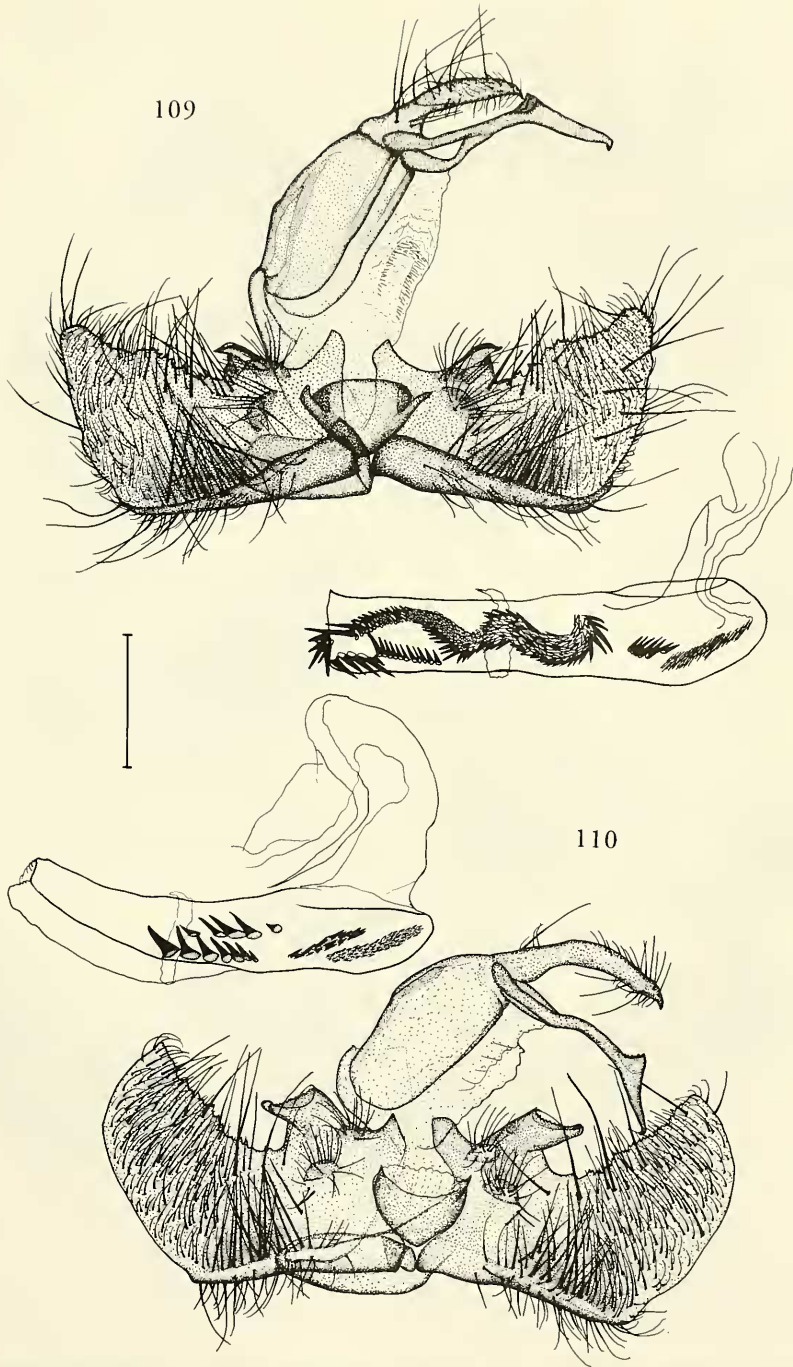




Figs. 101-105. Male genitalia; ventro-caudal aspect, valvae spread; aedeagus separated, lateral aspect. — 101, *Euchromius matador*, 102, *Euchromius gnathosellus*, 103-105, *Euchromius zephyrus*, 103, valvae, 104, juxta separated, 105, tegumen, uncus and gnathos separated. Scale bar 0.5 mm.

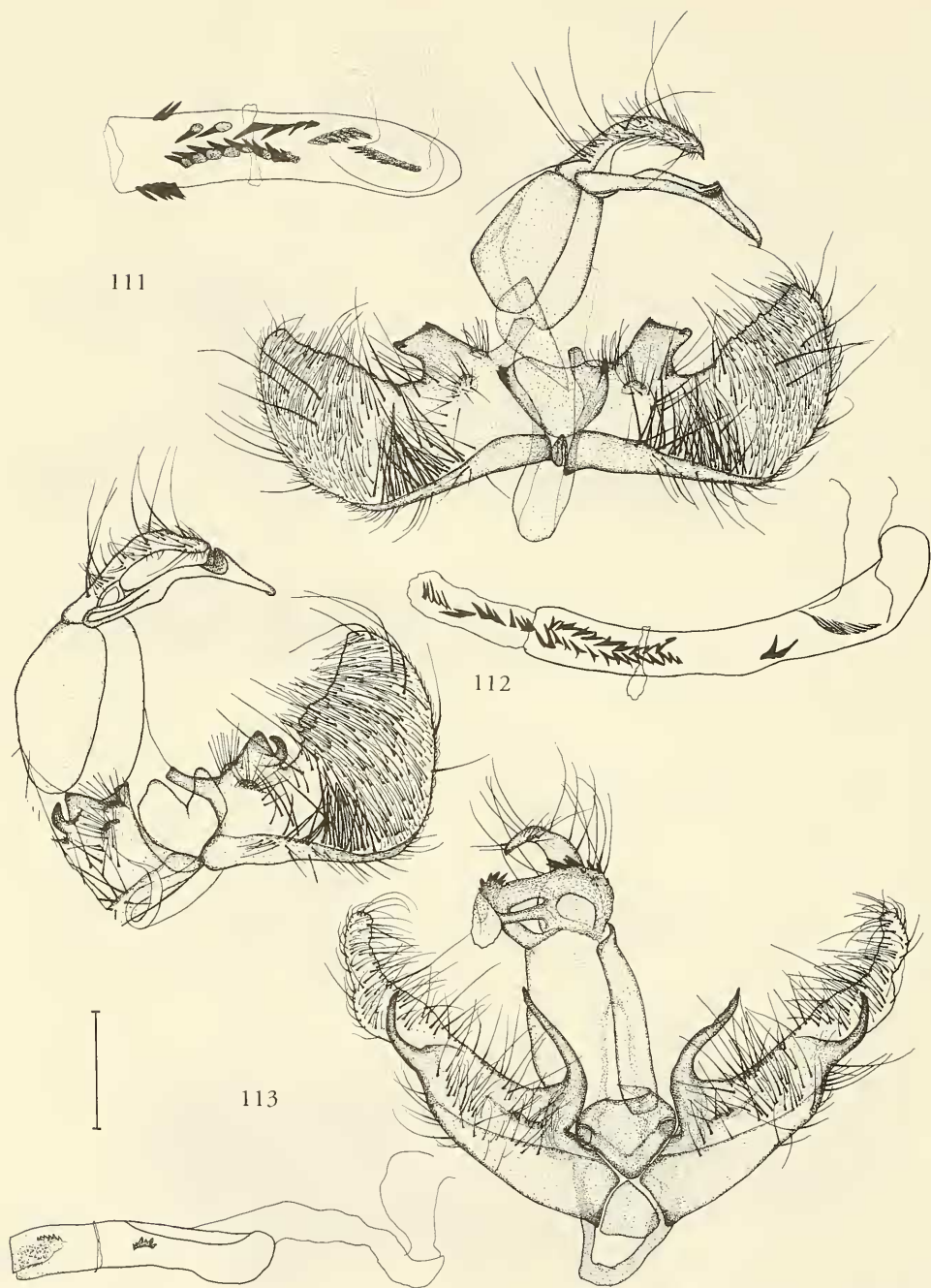


Figs. 106-108. Male genitalia; ventro-caudal aspect, valvae spread; aedeagus separated, lateral aspect. – 106, *Euchromius tanalis*, 107, *Euchromius mythus*, 108, *Euchromius galapagosalis*. Scale bar 0.5 mm.

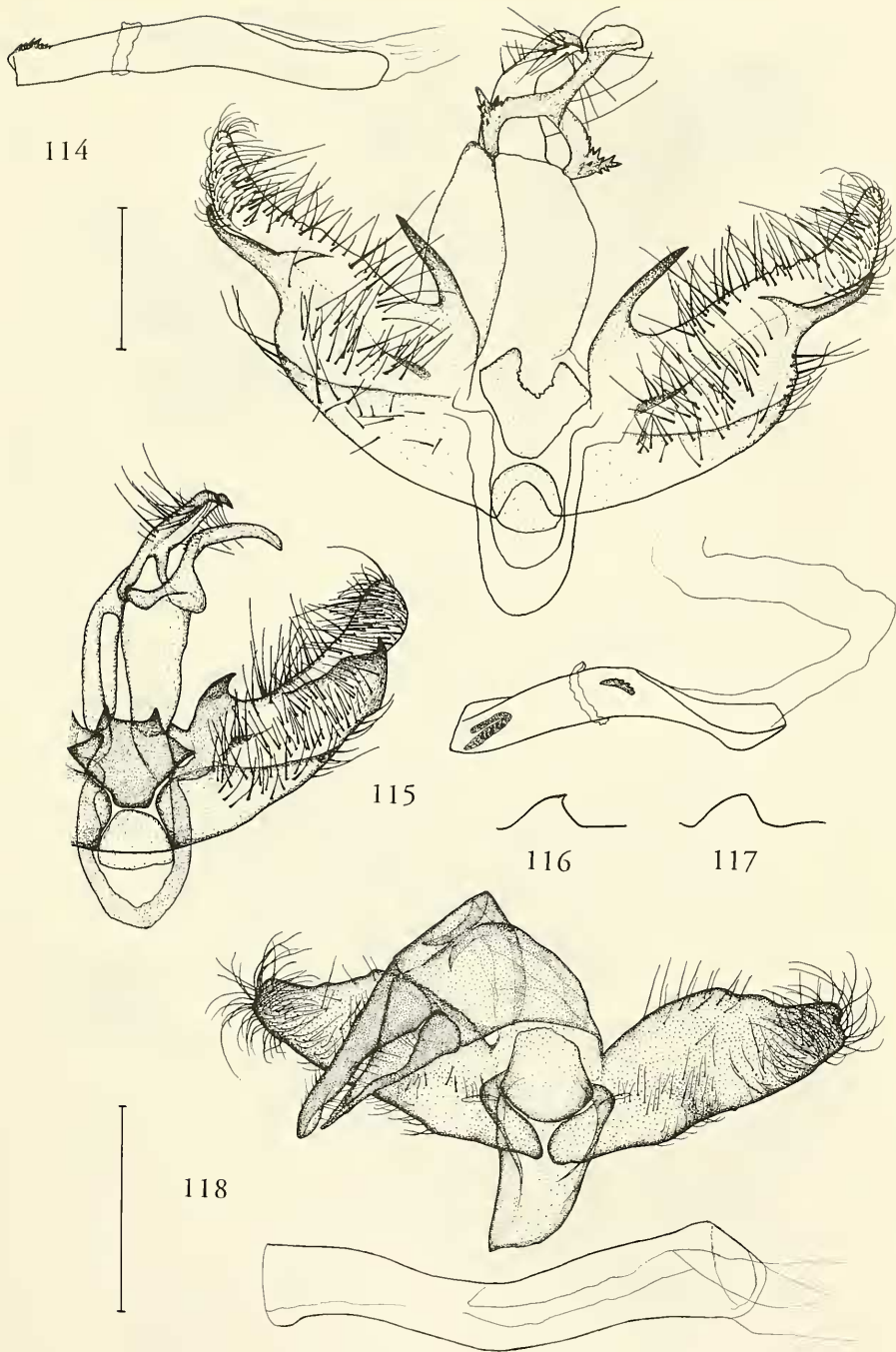


Figs. 109-110. Male genitalia; ventro-caudal aspect, valvae spread; aedeagus separated, lateral aspect. — 109, *Euchromius li-macellus*; 110, *Euchromius minutus*. Scale bar 0.5 mm.

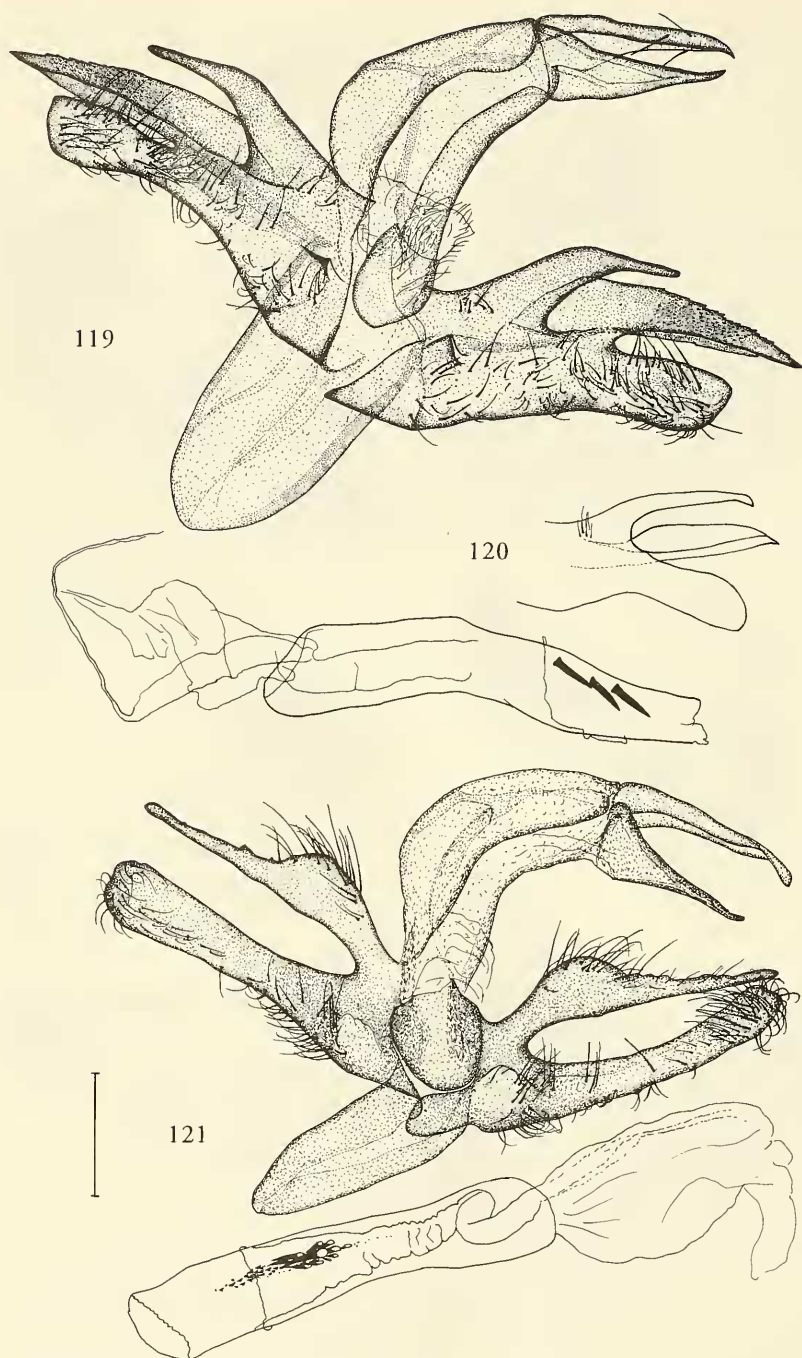




Figs. 111-113. Male genitalia; ventro-caudal aspect, valvae spread; aedeagus separated. – 111, *Eucromius salialis*, aedeagus dorsal aspect; 112, *Eucromius ocellus*, aedeagus lateral aspect; 113, *Eucromius confusus*, aedeagus lateral aspect. Scale bar 0.5 mm.

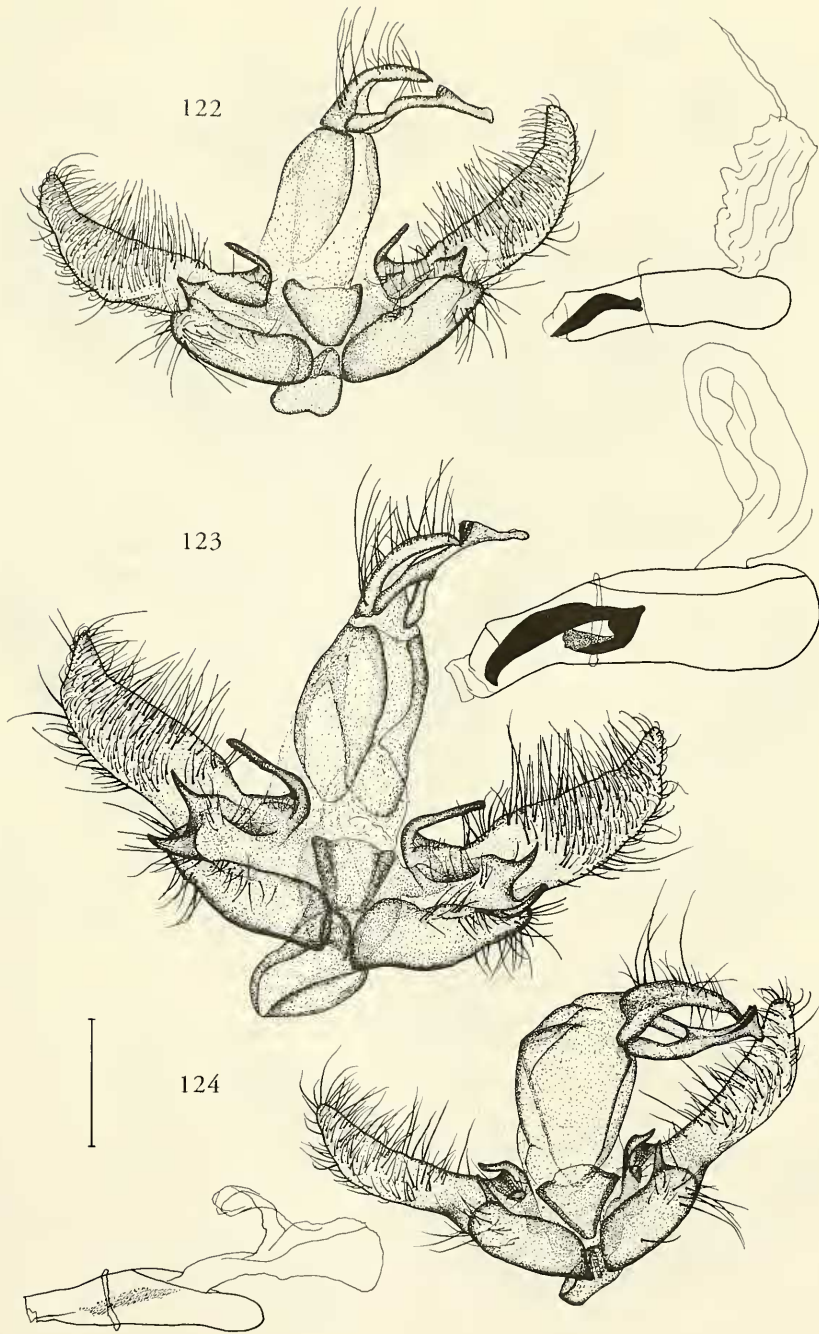


Figs. 114-118. Male genitalia; ventro-caudal aspect, valvae spread; aedeagus separated, lateral aspect. – 114, *Euchromius pulverosus*; 115-117, *Euchromius vinculellus*, 115, male genitalia, 116-117, processus basalis; 118, *Miyakea lushanus*. Scale bar 0.5 mm.

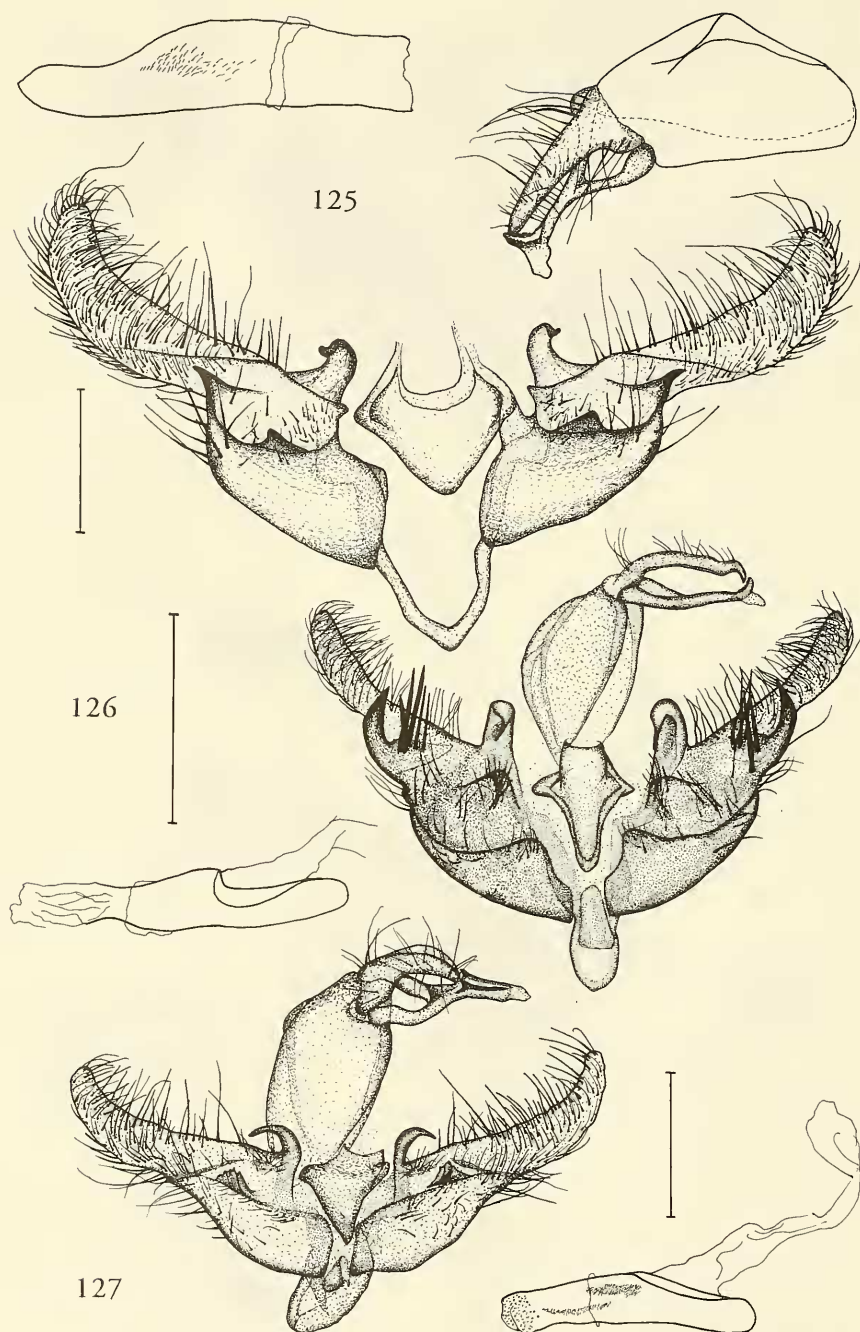


Figs. 119-121. Male genitalia; ventro-caudal aspect, valvae spread; aedeagus separated. – 119-120, *Miyakea raddeellus*, 119, male genitalia, aedeagus lateral aspect, 120, processus basalis and valva; 121, *Miyakea expansa*, aedeagus dorsal aspect. Scale bar 0.5 mm.

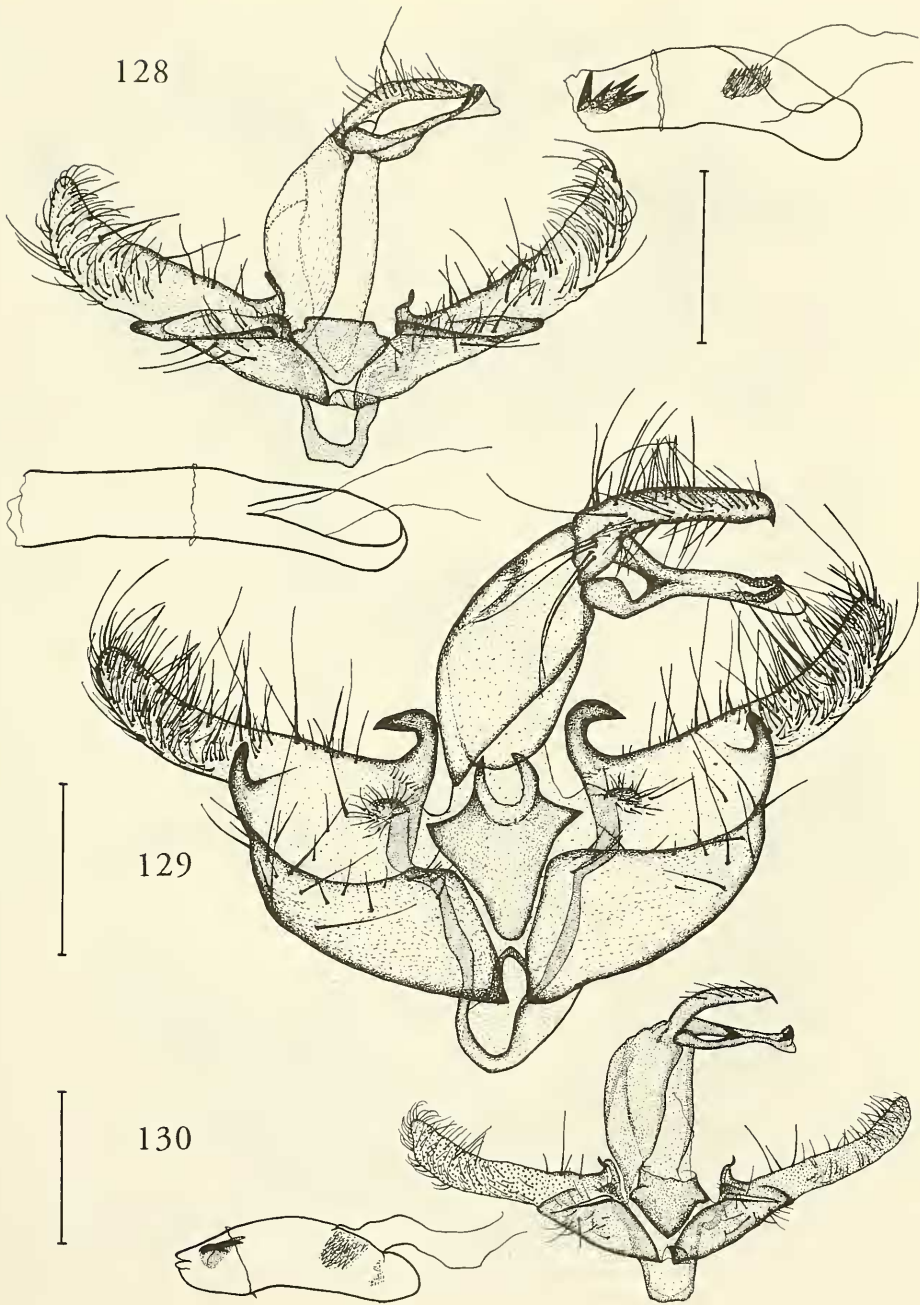




Figs. 122-124. Male genitalia; ventro-caudal aspect, valvae spread; aedeagus separated, lateral aspect. — 122, *Euchromius anapiellus*, 123, *Euchromius bellus*, 124, *Euchromius bleszynskiellus*. Scale bar 0.5 mm.

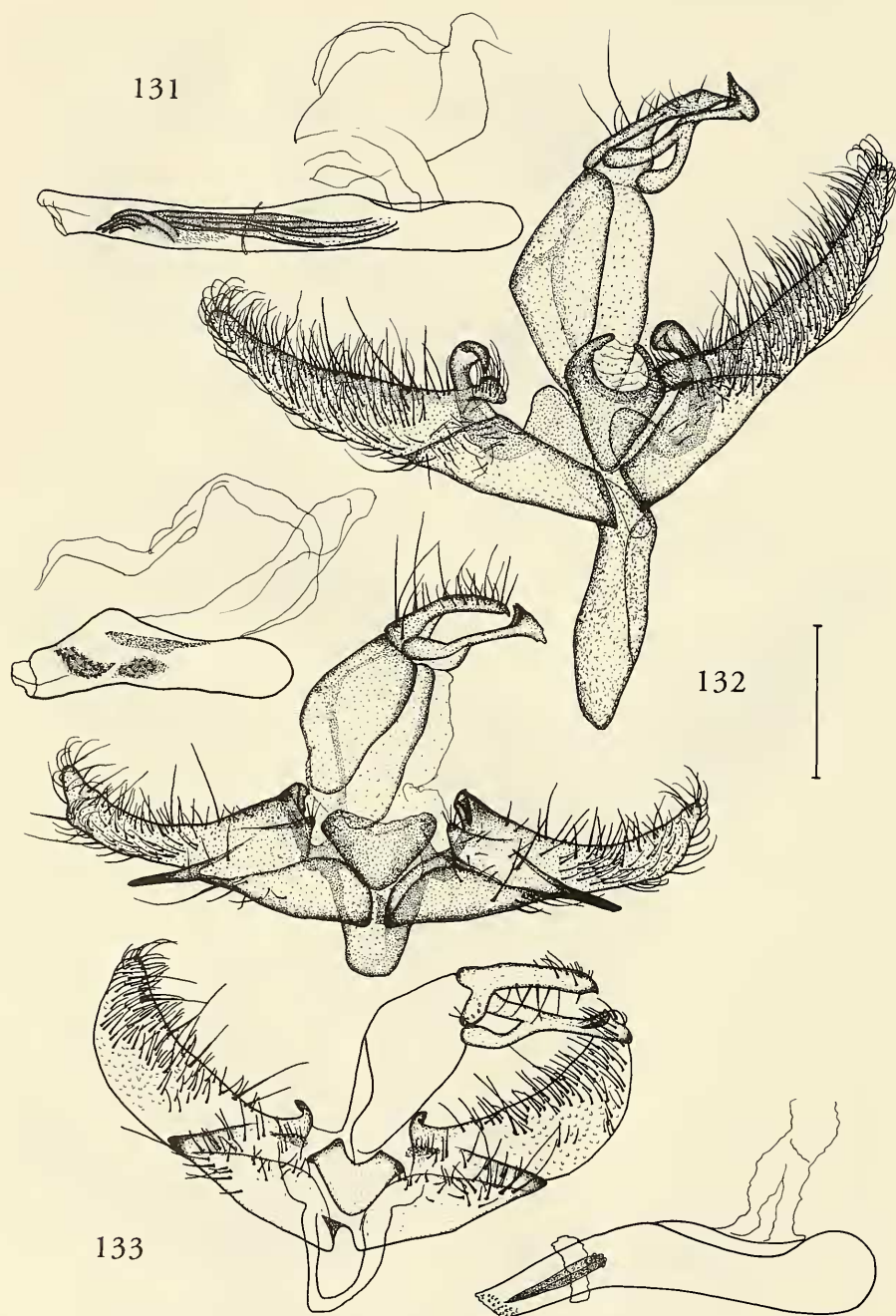


Figs. 125-127. Male genitalia; ventro-caudal aspect, valvae spread; aedeagus separated, lateral aspect. – 125, *Euchromius bleszynskii*, tegumen, uncus and gnathos separated. Scale 0.5 mm. 126, *Euchromius scobiolae*. Scale 1 mm. 127, *Euchromius superbillus*. Scale bar 0.5 mm.

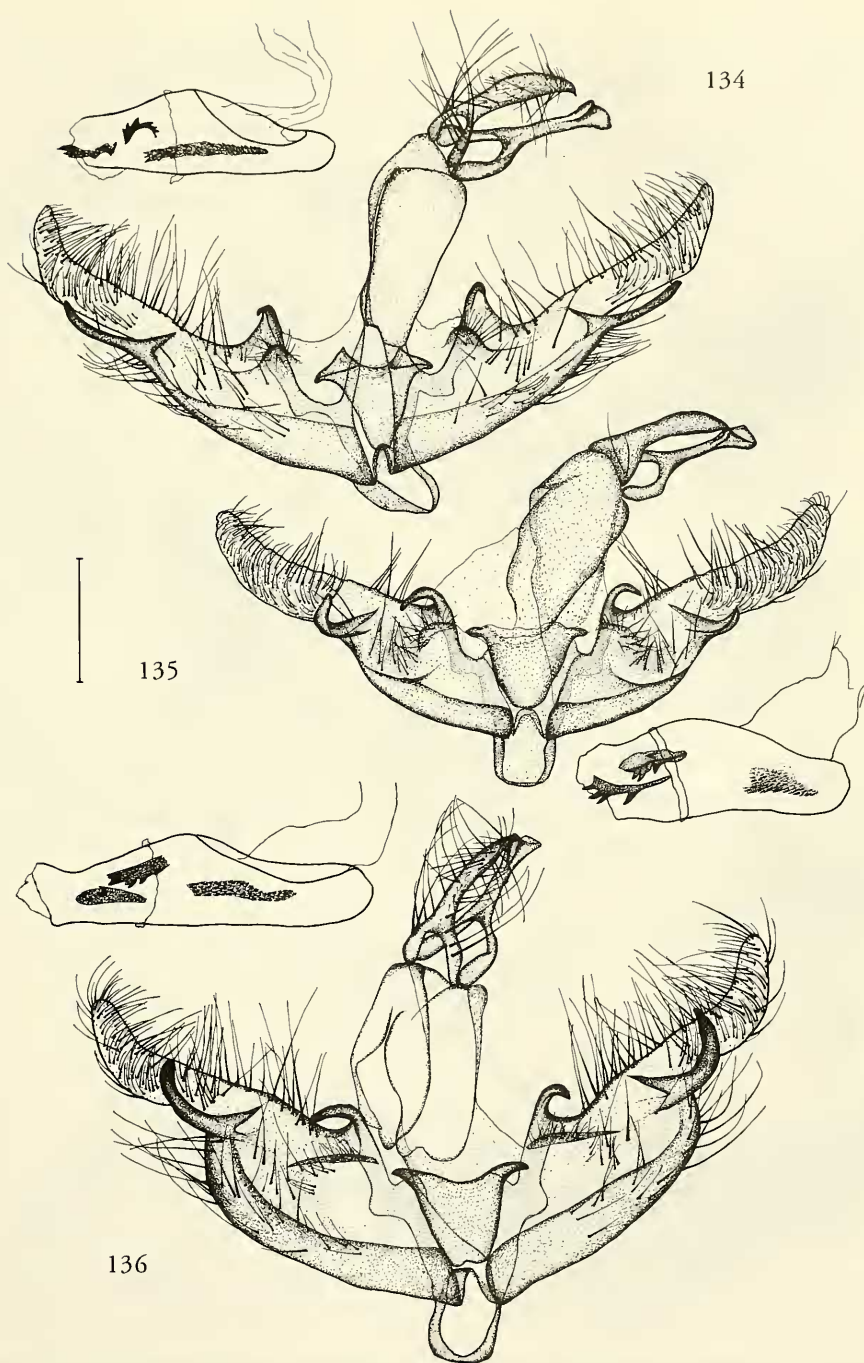


Figs. 128-130. Male genitalia; ventro-caudal aspect, valvae spread; aedeagus separated, lateral aspect. — 128, *Euchromius kedjellus*; 129, *Euchromius malekalis*; 130, *Euchromius mouchai*. Scale bar 0.5 mm.

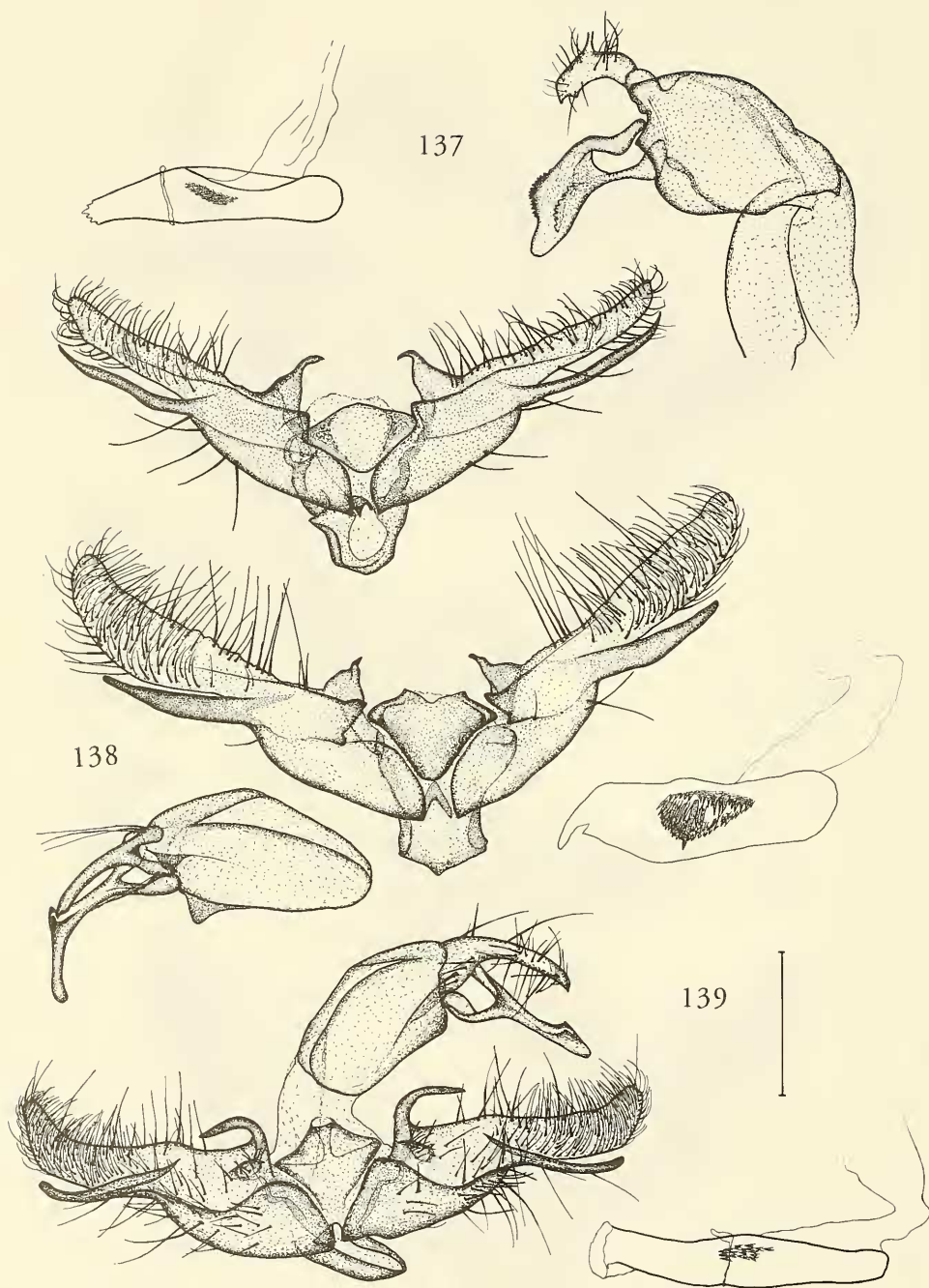




Figs. 131-133. Male genitalia; ventro-caudal aspect, valvae spread; aedeagus separated, lateral aspect. – 131, *Euchromius nivialis*; 132, *Euchromius rayatellus*; 133, *Euchromius gozmanyi*. Scale bar 0.5 mm.

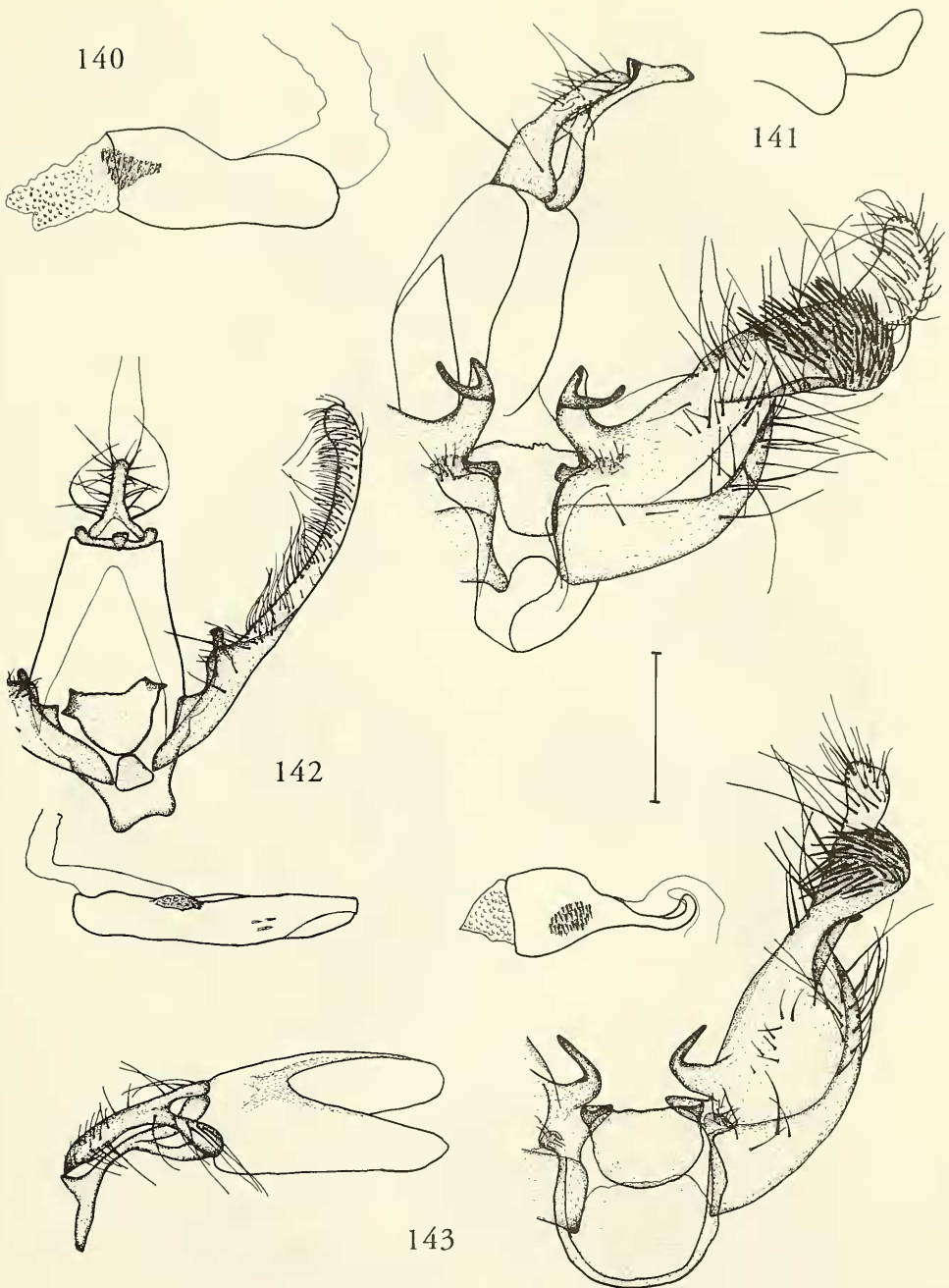


Figs. 134-136. Male genitalia; ventro-caudal aspect, valvae spread; aedeagus separated, lateral aspect. – 134, *Euchromius gratiosellus*, 135, *Euchromius jaxartellus*, 136, *Euchromius ramburiellus*. Scale bar 0.5 mm.

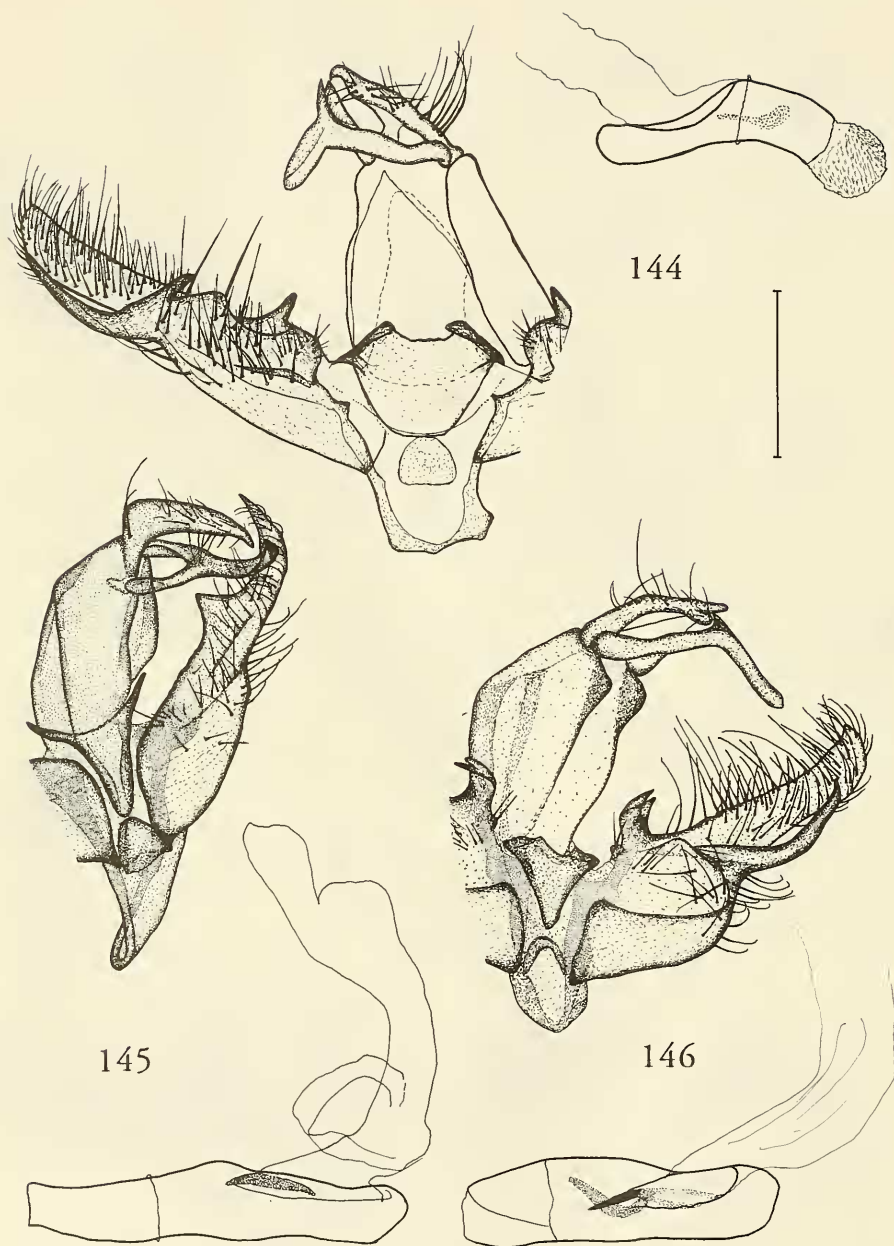


Figs. 137-139. Male genitalia; ventro-caudal aspect, valvae spread; aedeagus separated, lateral aspect. – 137, *Euchromius sudanellus*, tegumen, uncus and gnathos separated; 138, *Euchromius subcambridgei*, tegumen, uncus and gnathos separated; 139, *Euchromius cambridgei*. Scale bar 0.5 mm.

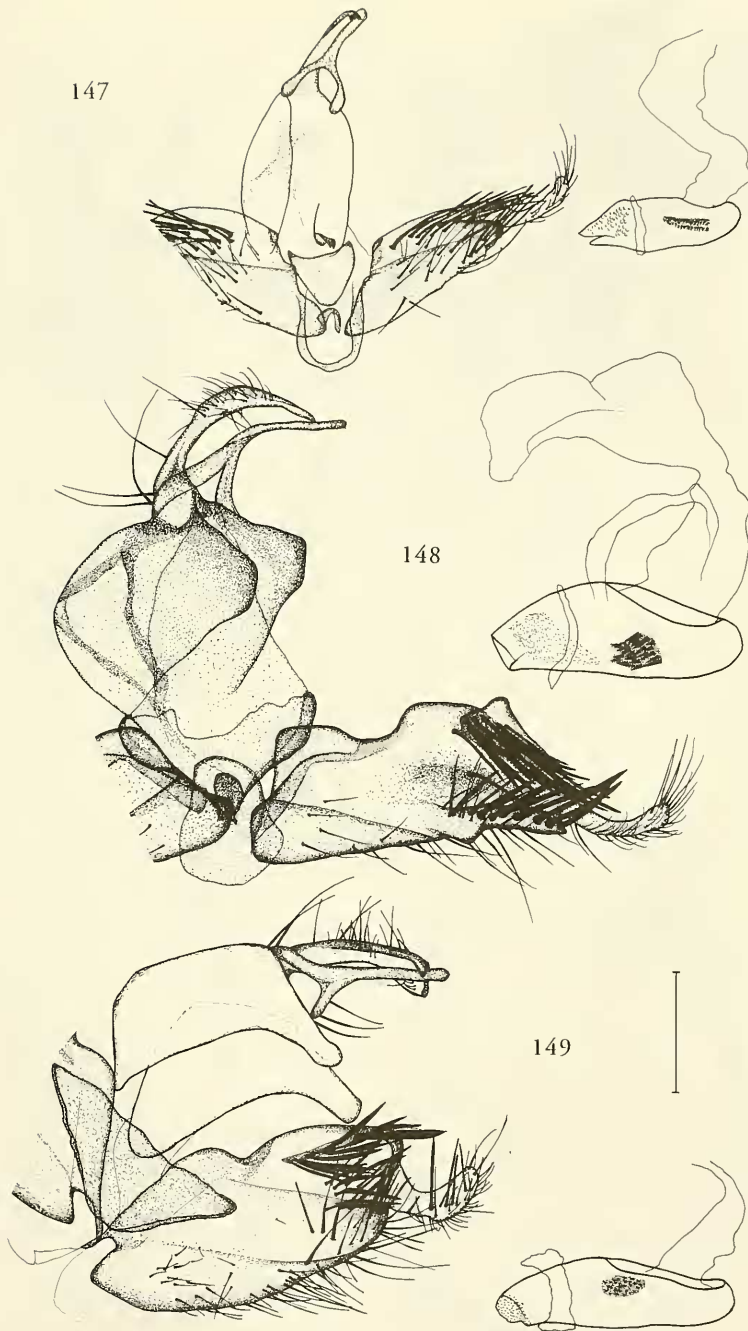




Figs. 140-143. Male genitalia; ventro-caudal aspect, valvae spread; aedeagus separated, lateral aspect. — 140-141, *Euchromius viettei*, 140, male genitalia, aedeagus lateral aspect, 141, valve and lobe; 142, *Euchromius klimeschi*; 143, *Euchromius hampsoni*, tegumen, uncus and gnathos separated. Scale bar 0.5 mm.

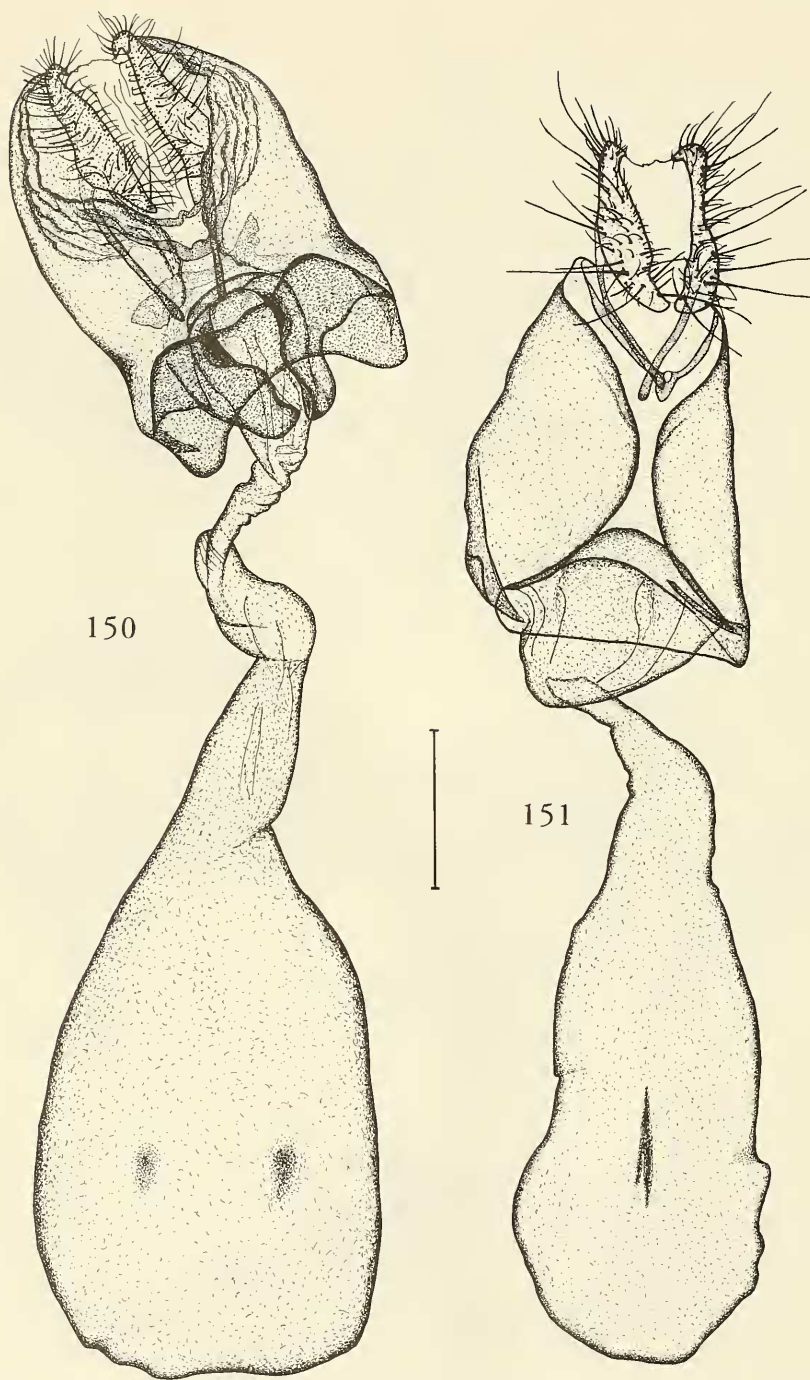


Figs. 144-146. Male genitalia; ventro-caudal aspect, valvae spread; aedeagus separated, lateral aspect. — 144, *Euchromius discopis*; 145, *Euchromius aris*; 146, *Euchromius labellum*. Scale bar 0.5 mm.

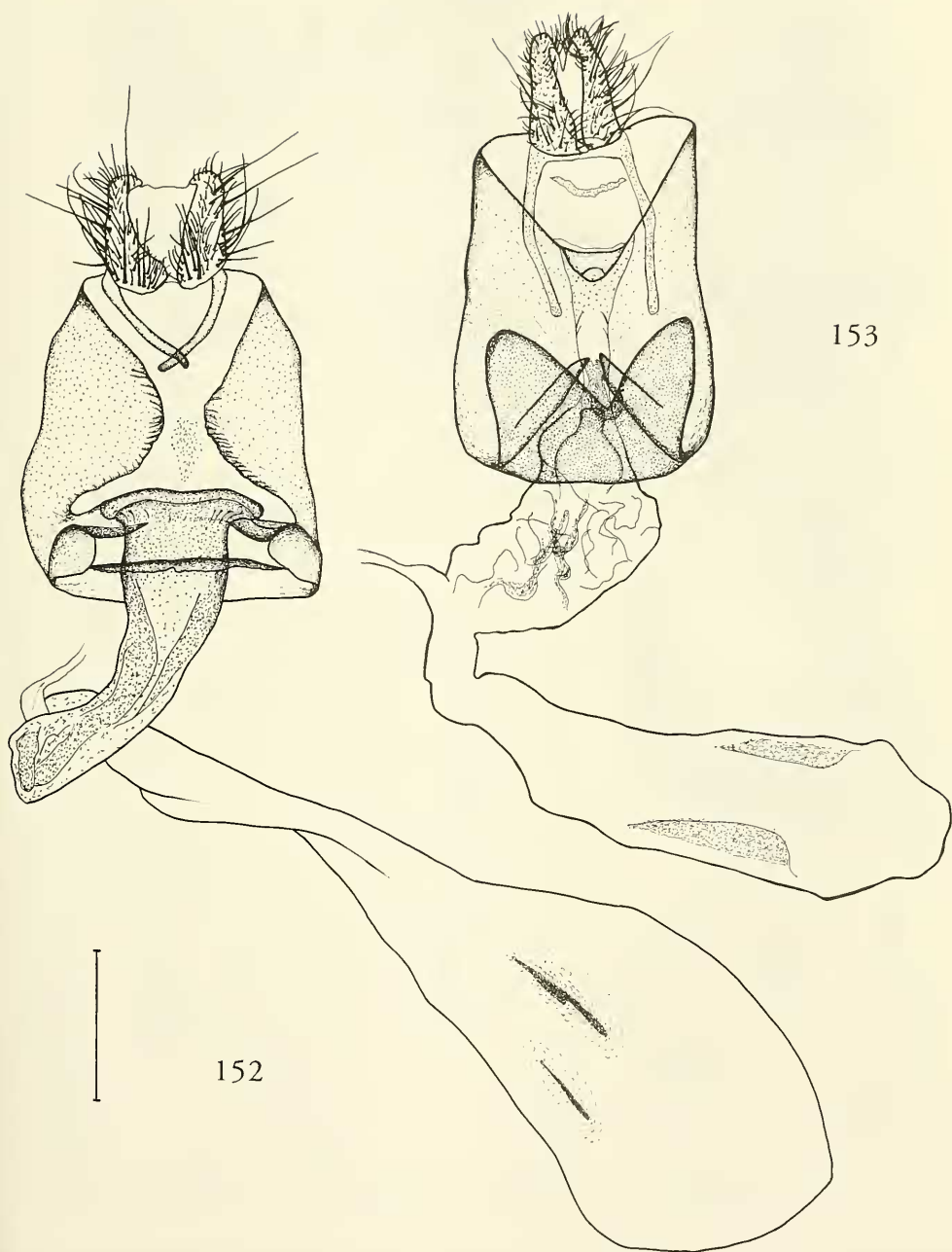


Figs. 147-149. Male genitalia; ventro-caudal aspect, valvae spread; aedeagus separated, lateral aspect. — 147, *Euchromius erum*; 148, *Euchromius locustus*; 149, *Euchromius nigrobasalis*. Scale bar 0.5 mm.





Figs. 150-151. Female genitalia; ventral aspect. – 150, *Euchromius circulus*, 151, *Euchromius cornus*. Scale bar 0.5 mm.

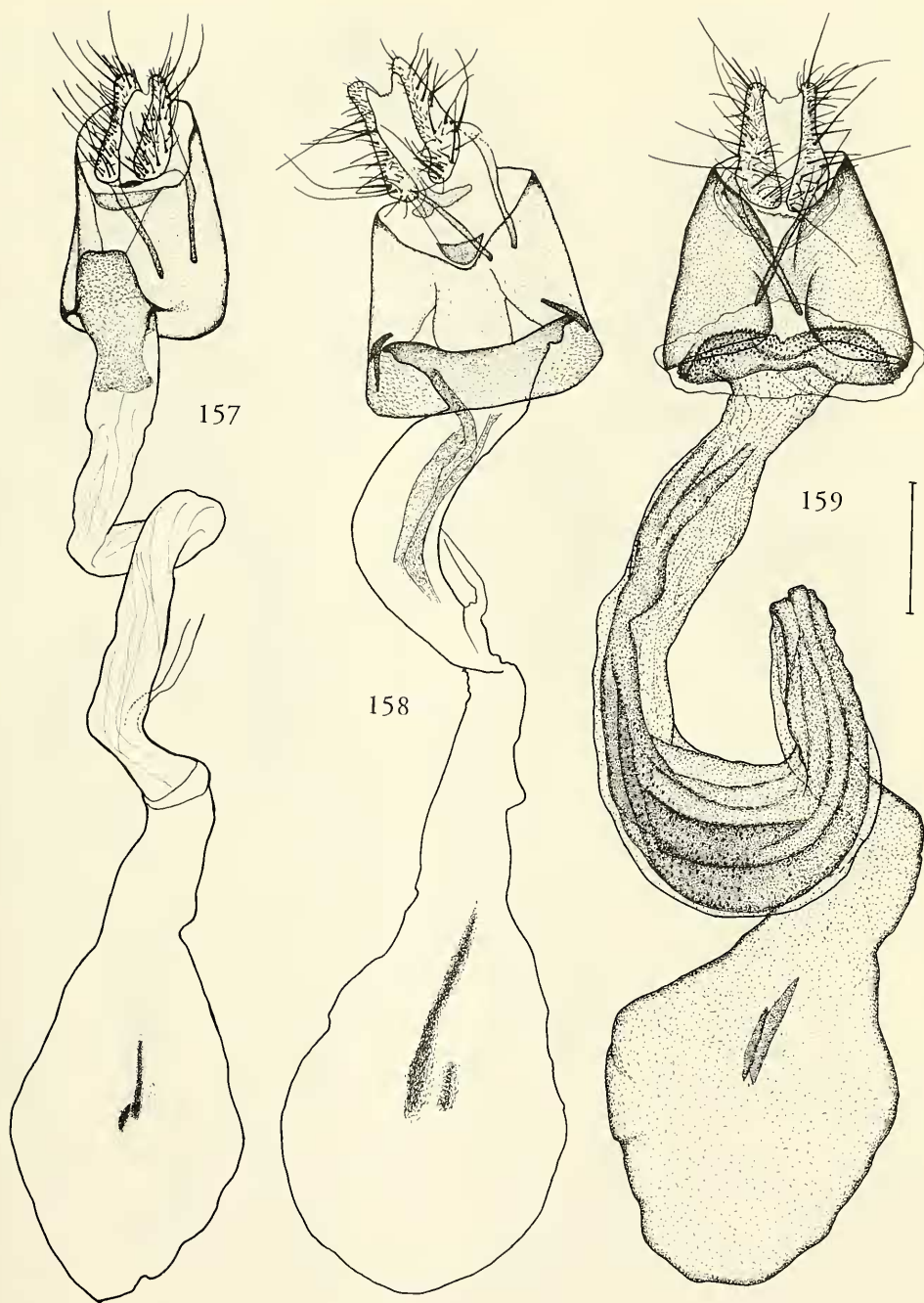


Figs. 152-153. Female genitalia; ventral aspect. – 152, *Euchromius californicalis*, 153, *Euchromius matador*. Scale bar 0.5 mm.

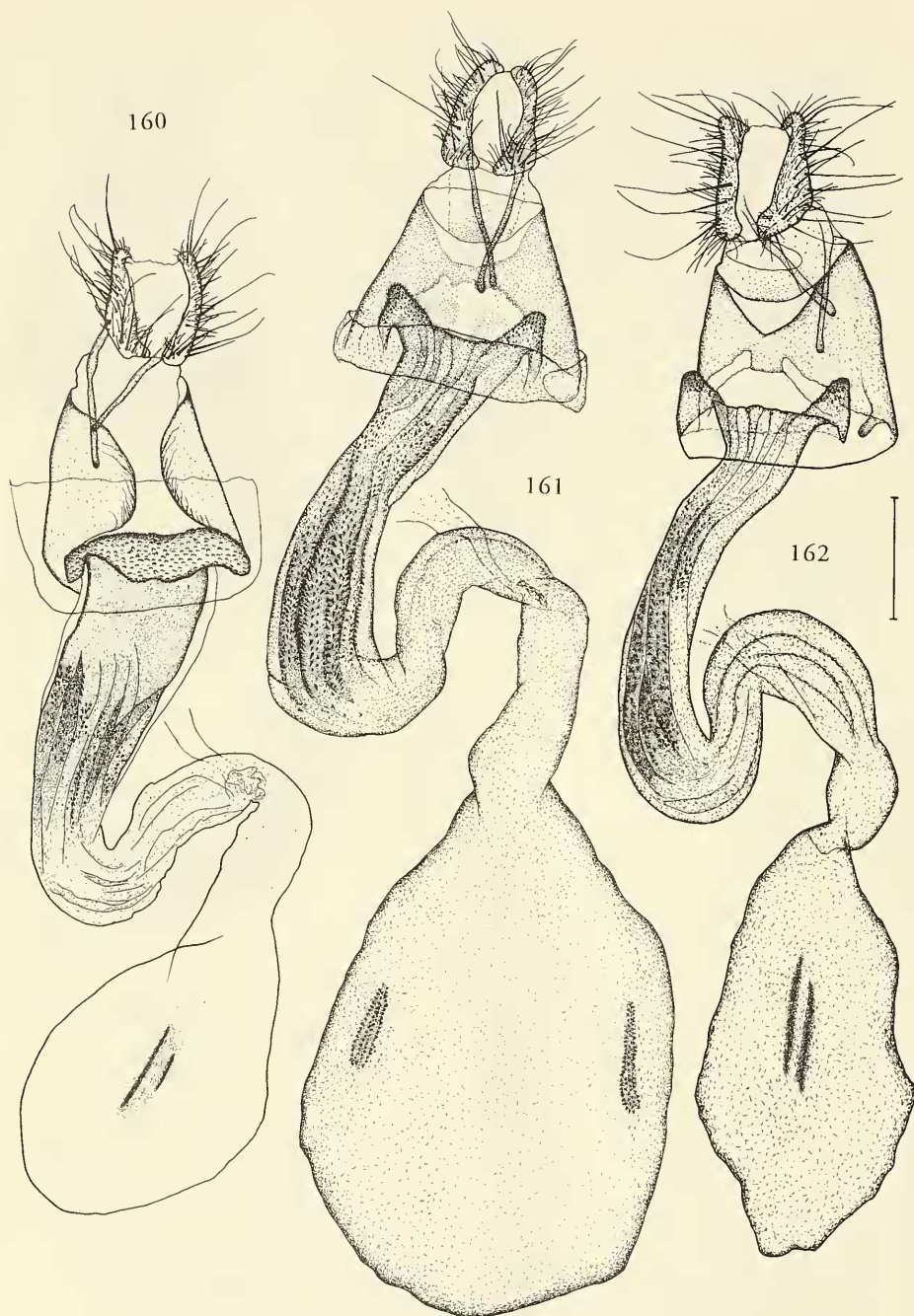


Figs. 154-156. Female genitalia; ventral aspect. – 154, *Euphranta gnathosellus*; 155, *Euphranta zephyrus*; 156, *Euphranta tanalis*. Scale bar 0.5 mm.

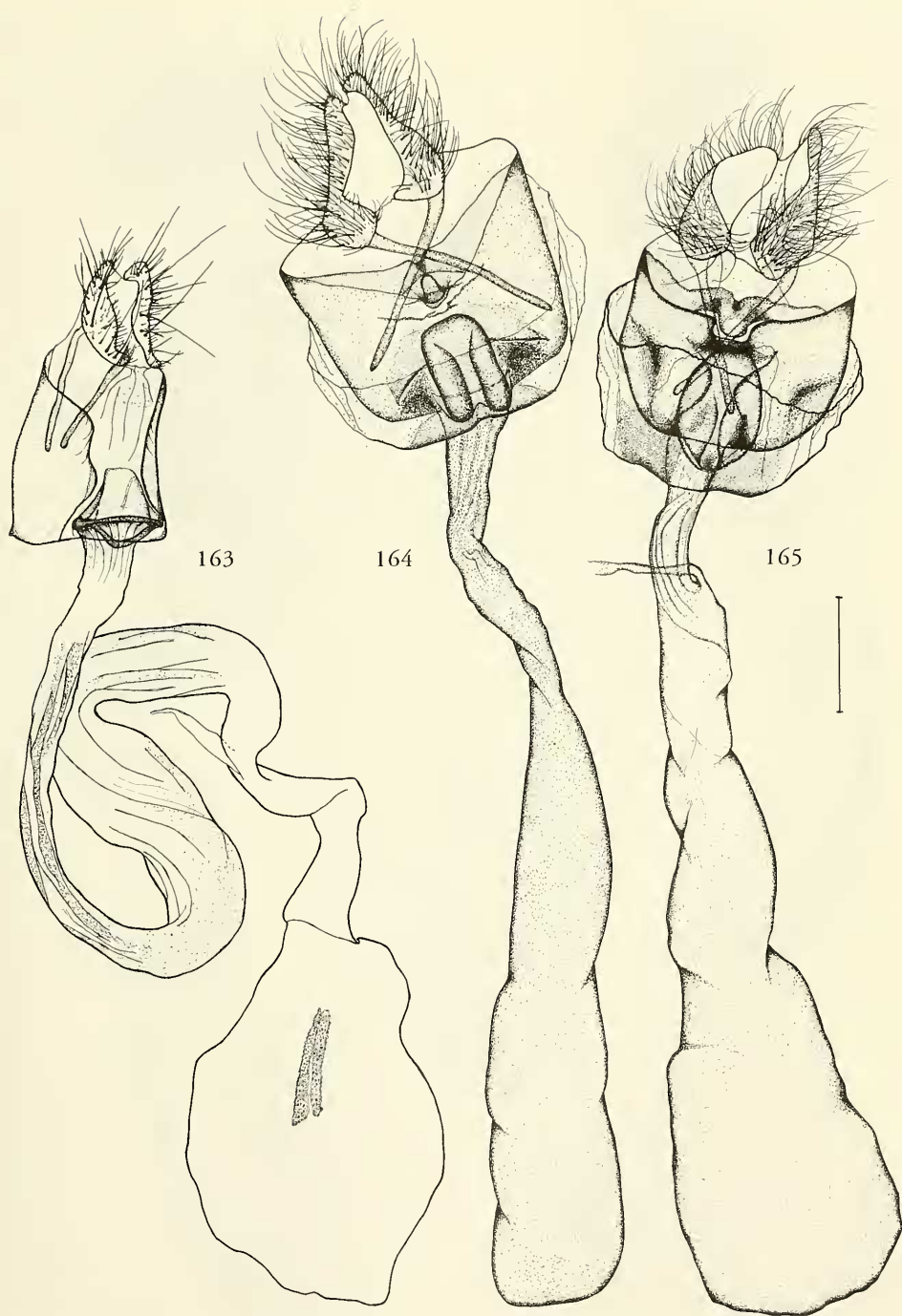




Figs. 157-159. Female genitalia; ventral aspect. — 157, *Euchromius mythus*, 158, *Euchromius geminus*, 159, *Euchromius galapagosalis*. Scale bar 0.5 mm.

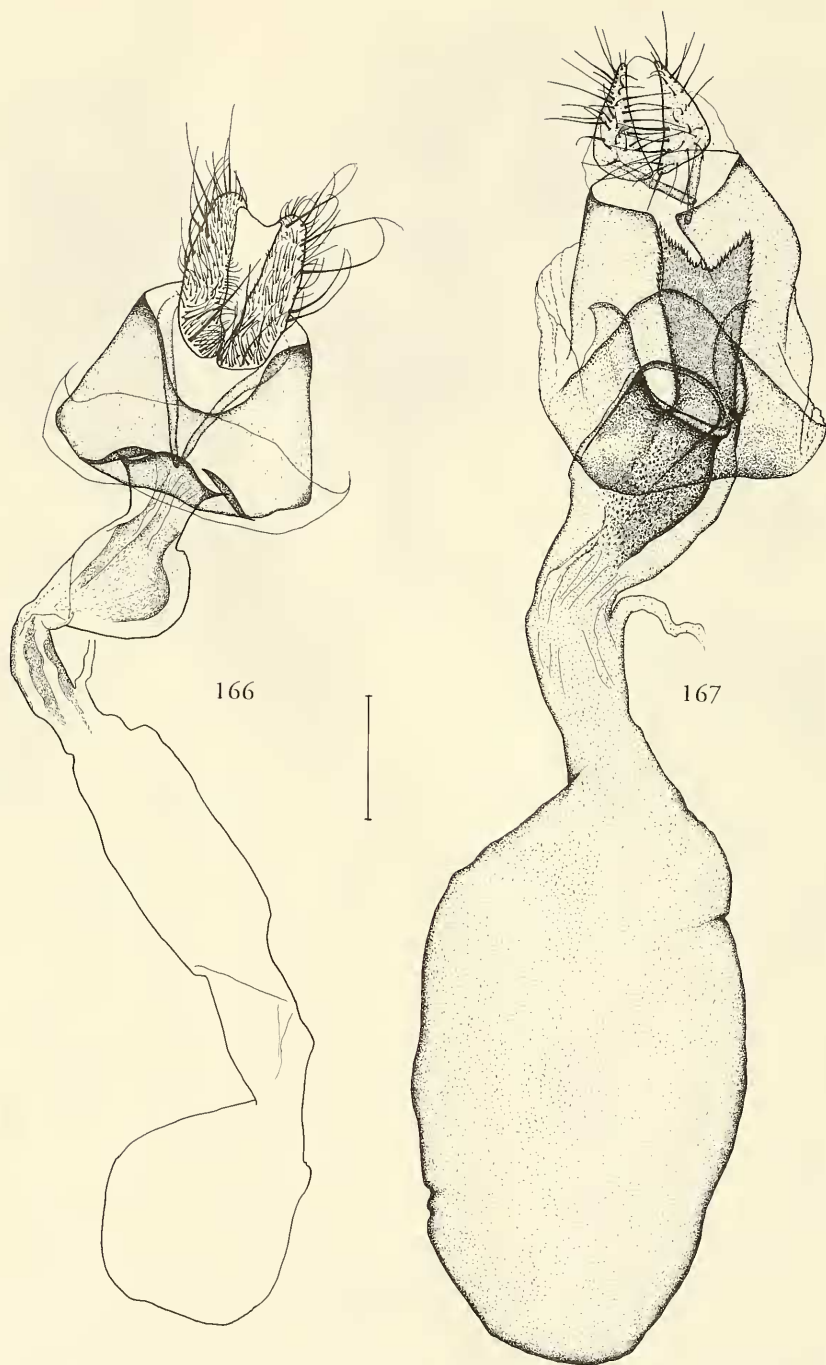


Figs. 160-162. Female genitalia; ventral aspect. – 160, *Euchromius limaellus*; 161, *Euchromius minutus*; 162, *Euchromius sal-talis*. Scale bar 0.5 mm.

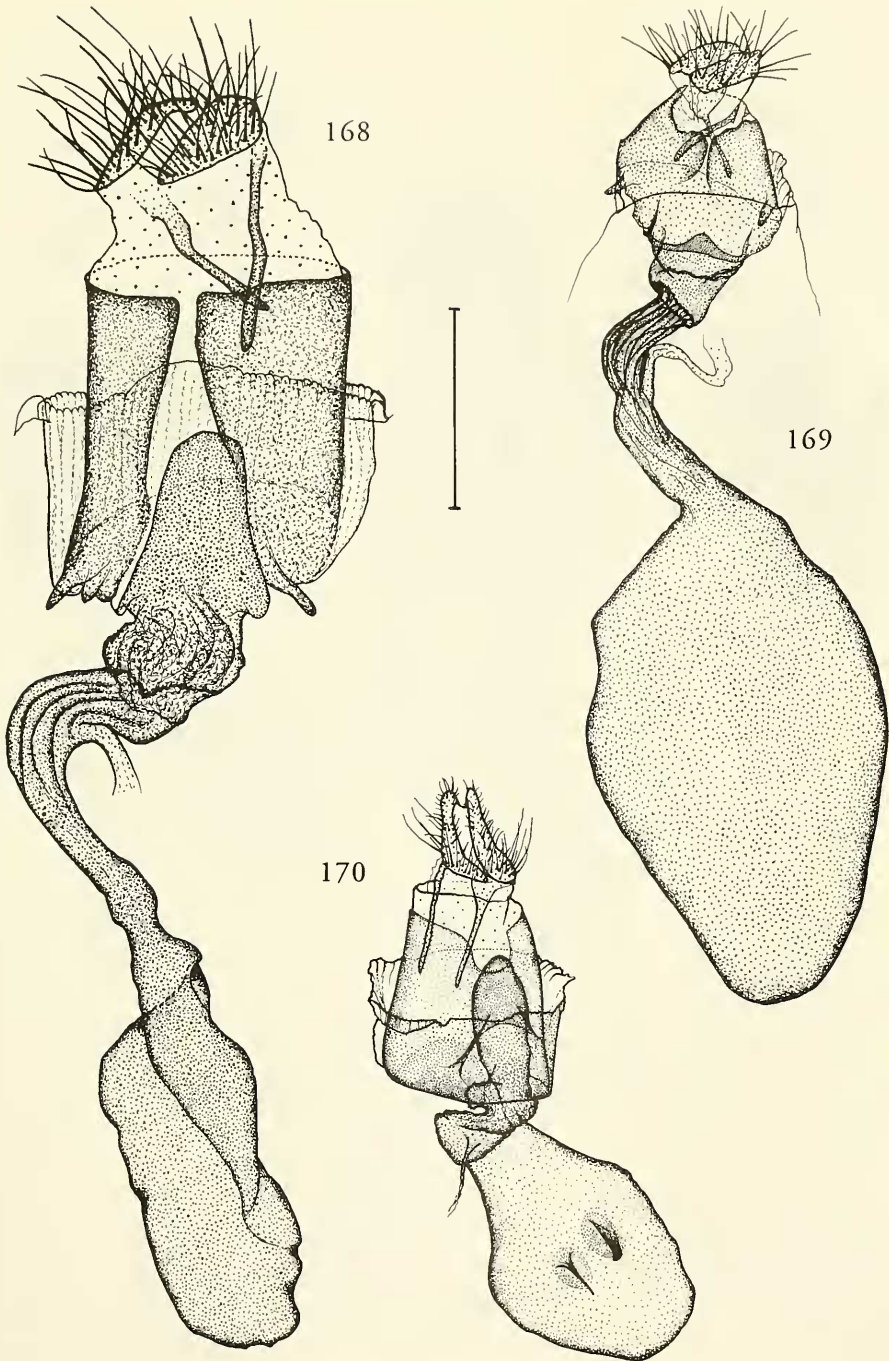


Figs. 163-165. Female genitalia; ventral aspect. — 163, *Euchromius ocellus*; 164, *Euchromius confusus*; 165, *Euchromius pulverosus*. Scale bar 0.5 mm.

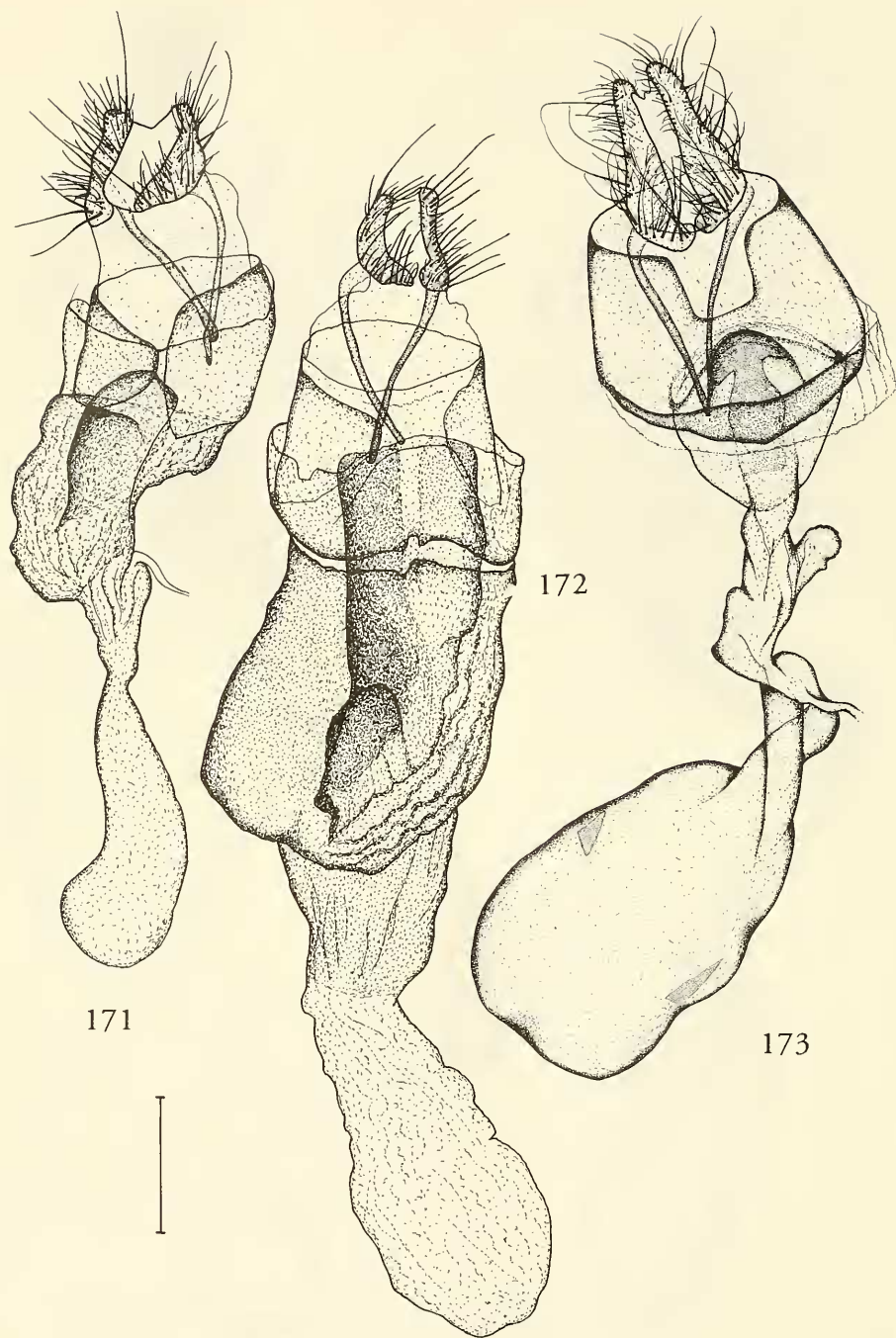




Figs. 166-167. Female genitalia; ventral aspect. – 166, *Euchromius vinculellus*, 167, *Miyakea raddeellus*. Scale bar 0.5 mm.



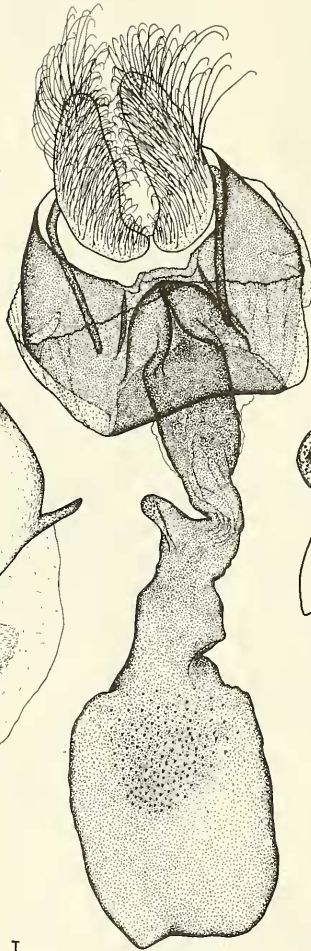
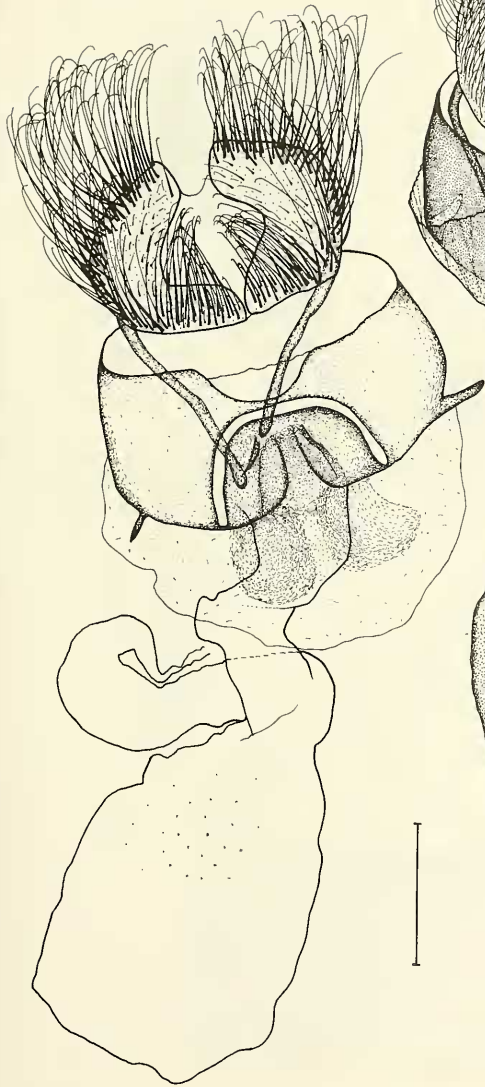
Figs. 168-170. Female genitalia; ventral aspect. - 168, *Miyakea expansa*; 169, *Miyakea lushmanus*; 170, *Euchromius gratiosellus*. Scale bar 1 mm.



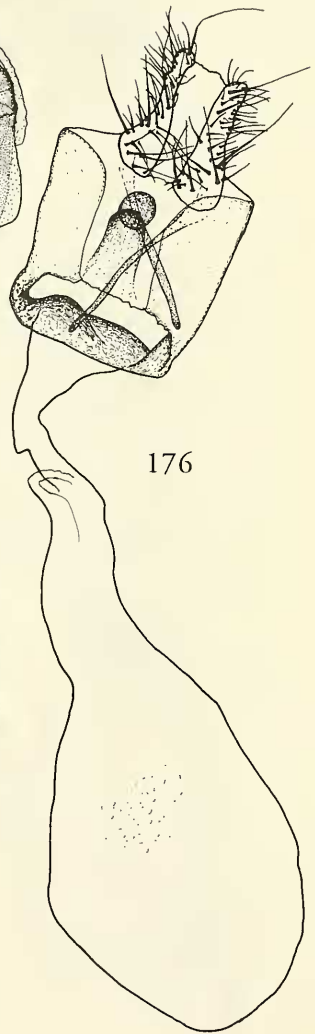
Figs. 171-173. Female genitalia; ventral aspect. – 171, *Euchromius anapiellus*, 172, *Euchromius bellus*, 173, *Euchromius bleszynskiellus*. Scale bar 0.5 mm.



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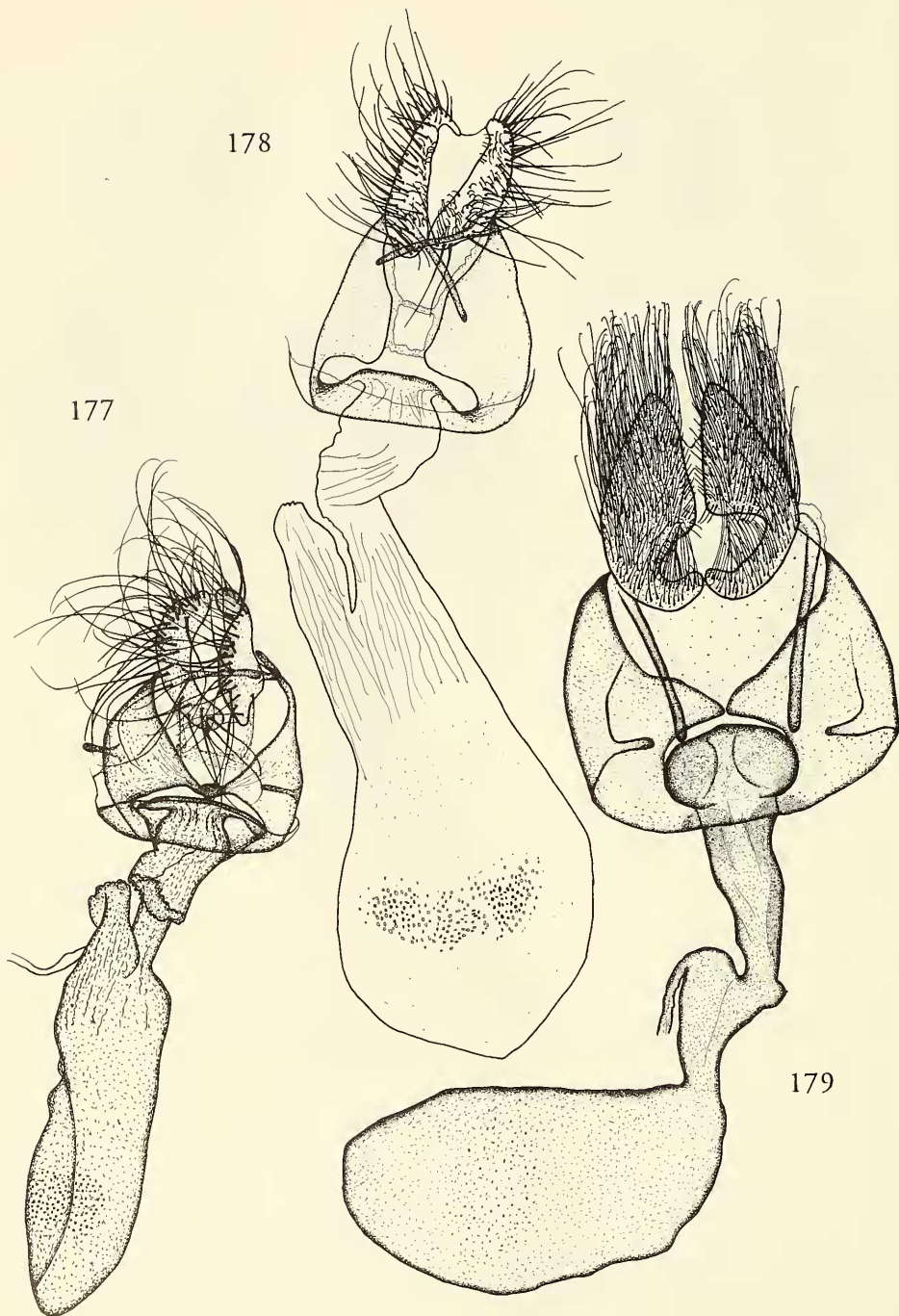


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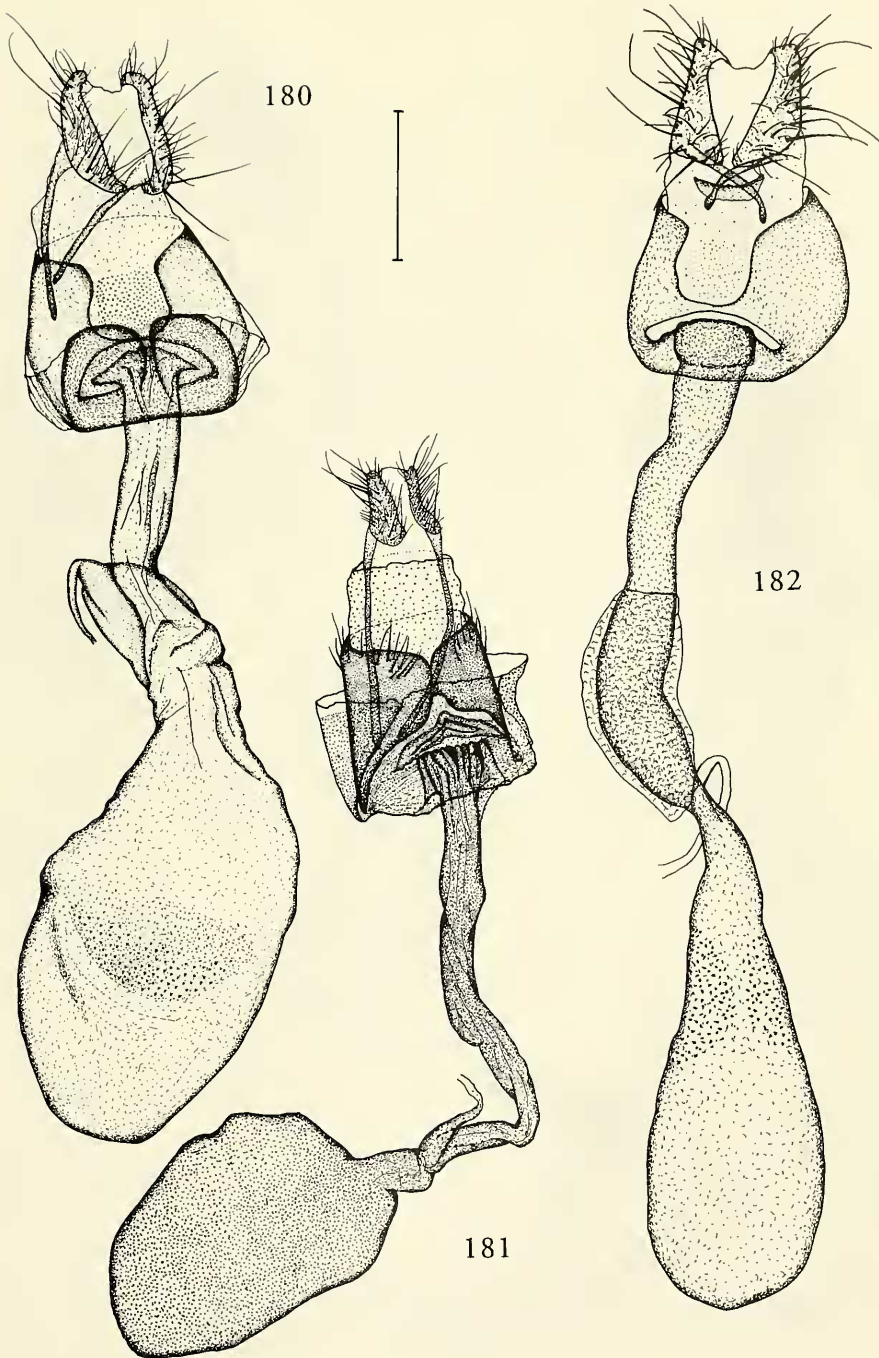


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Figs. 174-176. Female genitalia; ventral aspect. — 174, *Euchromius bleszynskii*; 175, *Euchromius scobiolae*; 176, *Euchromius superbellus*. Scale bar 0.5 mm.

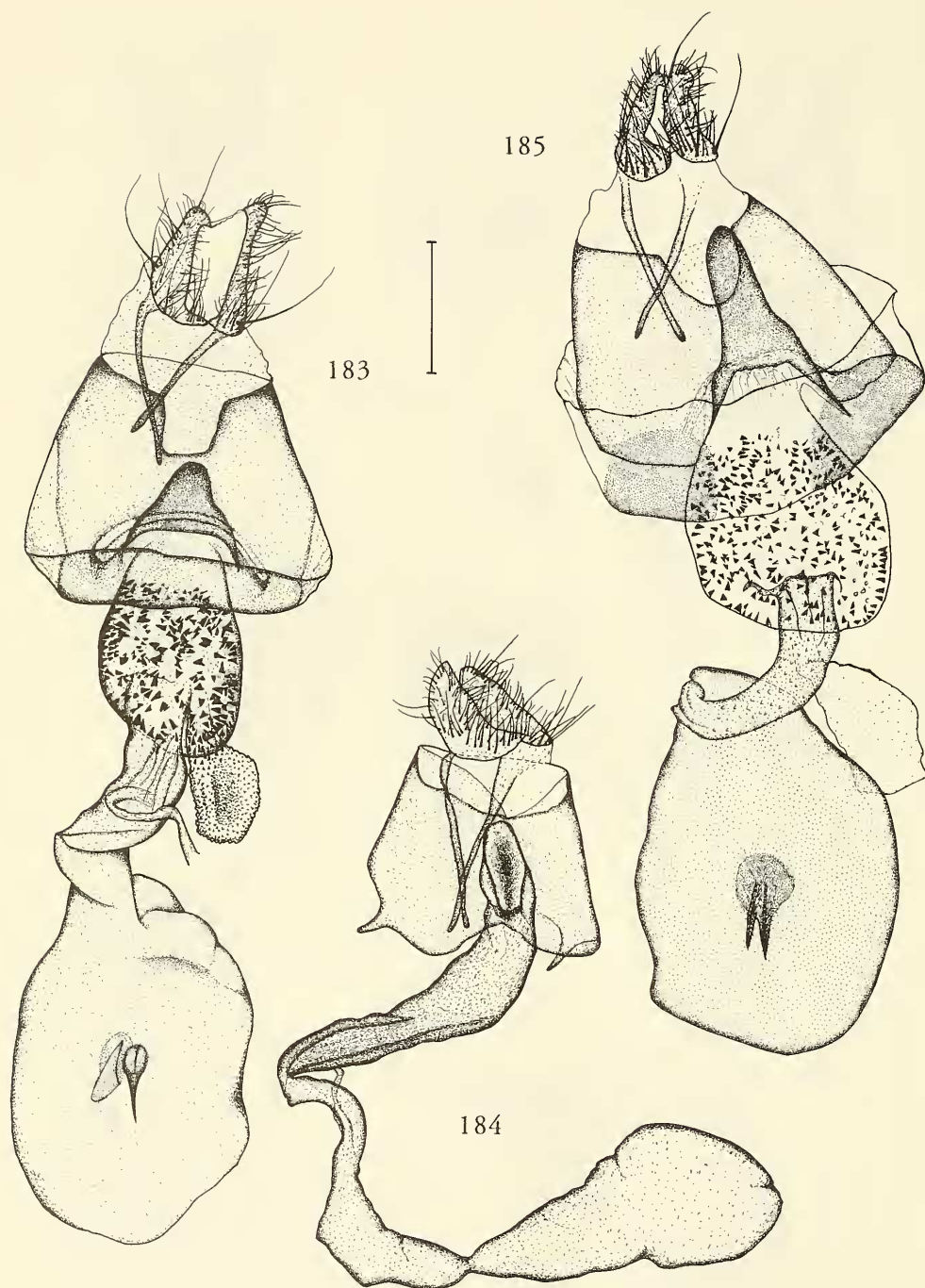


Figs. 177-179. Female genitalia; ventral aspect. – 177, *Euchromius keredjellus*; 184, *Euchromius mouchari*; 185, *Euchromius malekalis*. Scale 0.5 mm.

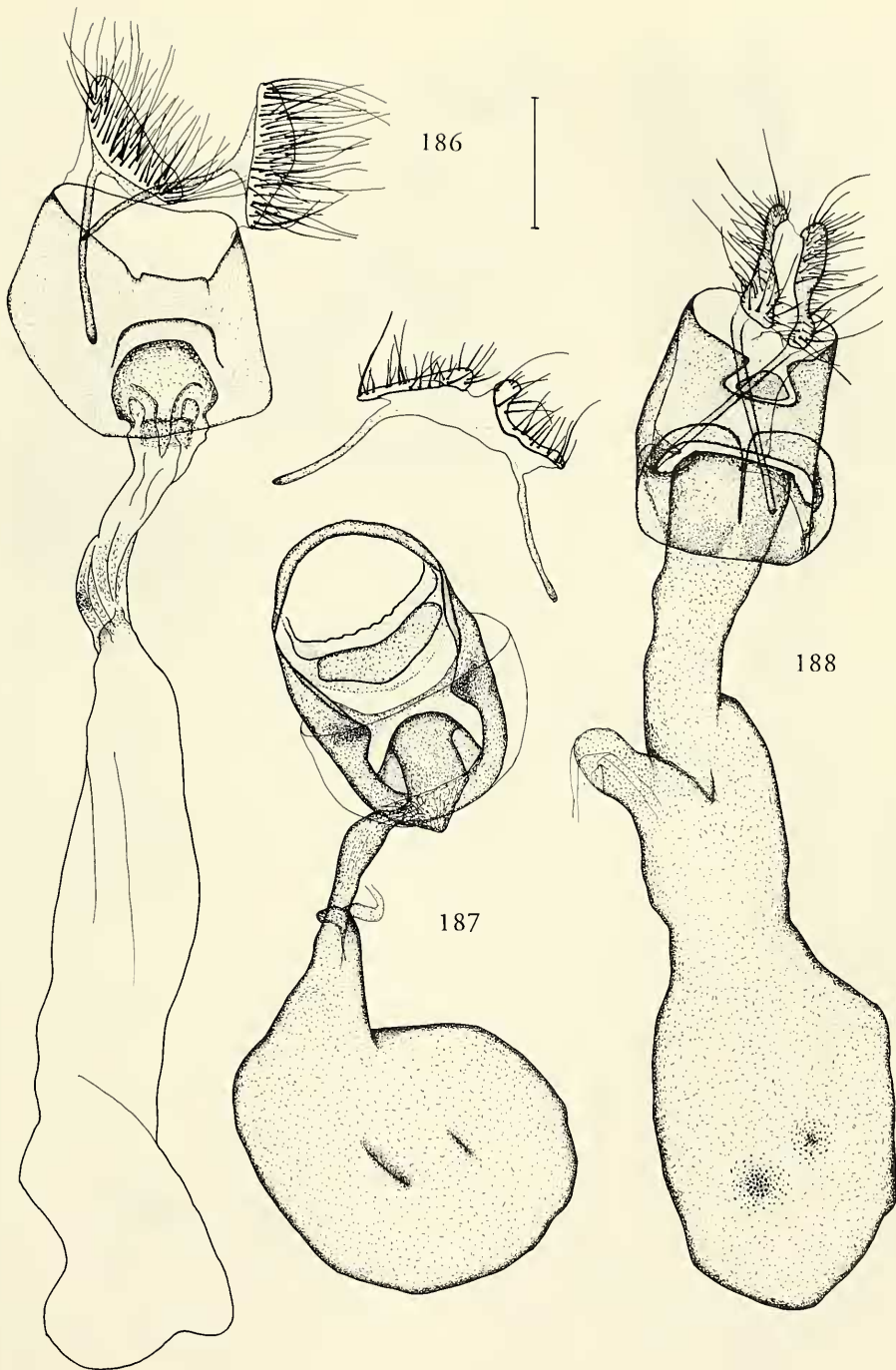


Figs. 180-182. Female genitalia; ventral aspect. — 180, *Euchromius rayatellus*, 181, *Euchromius nivalis*, 182, *Euchromius gozmanyi*. Scale bar 0.5 mm.

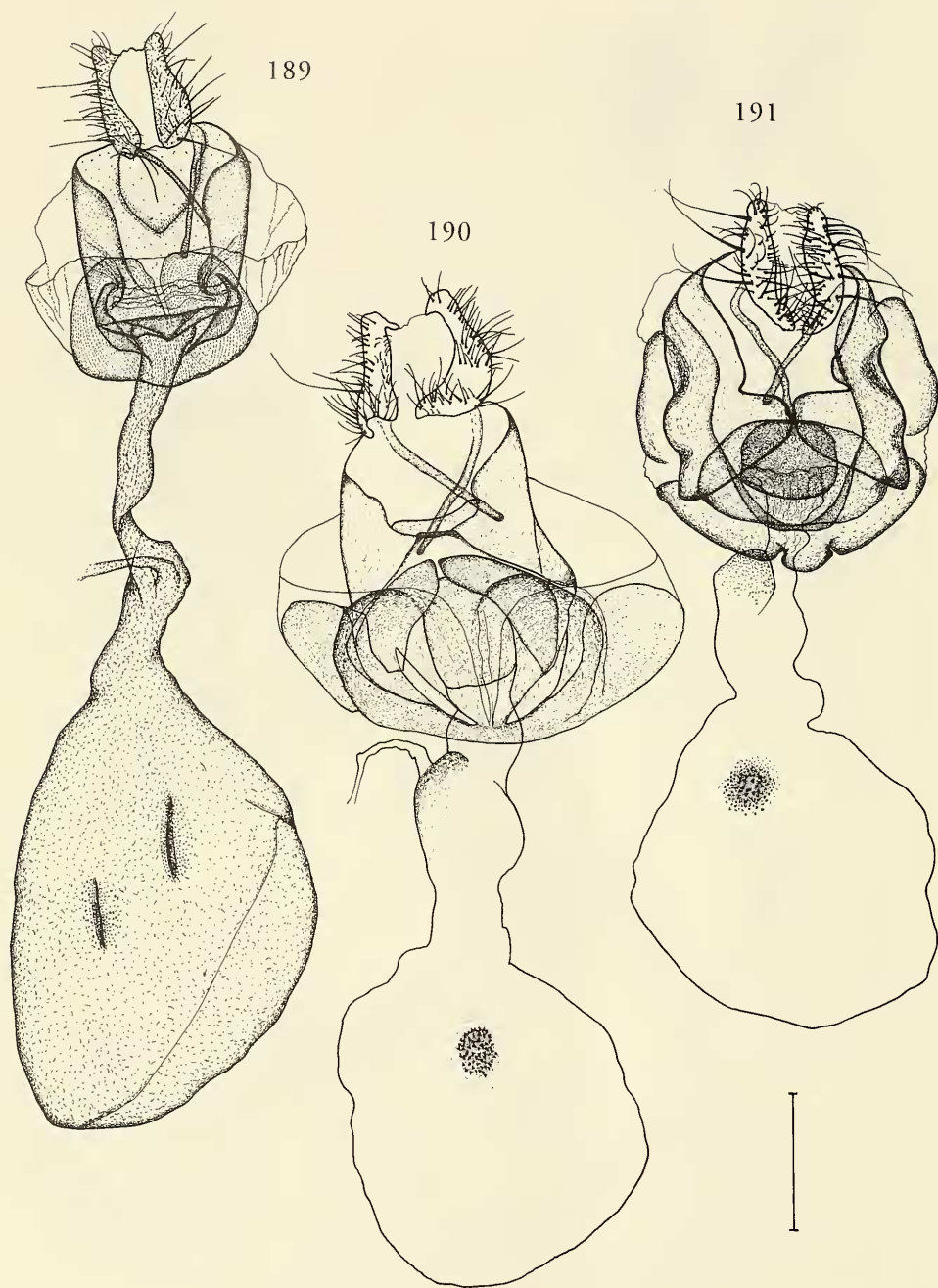




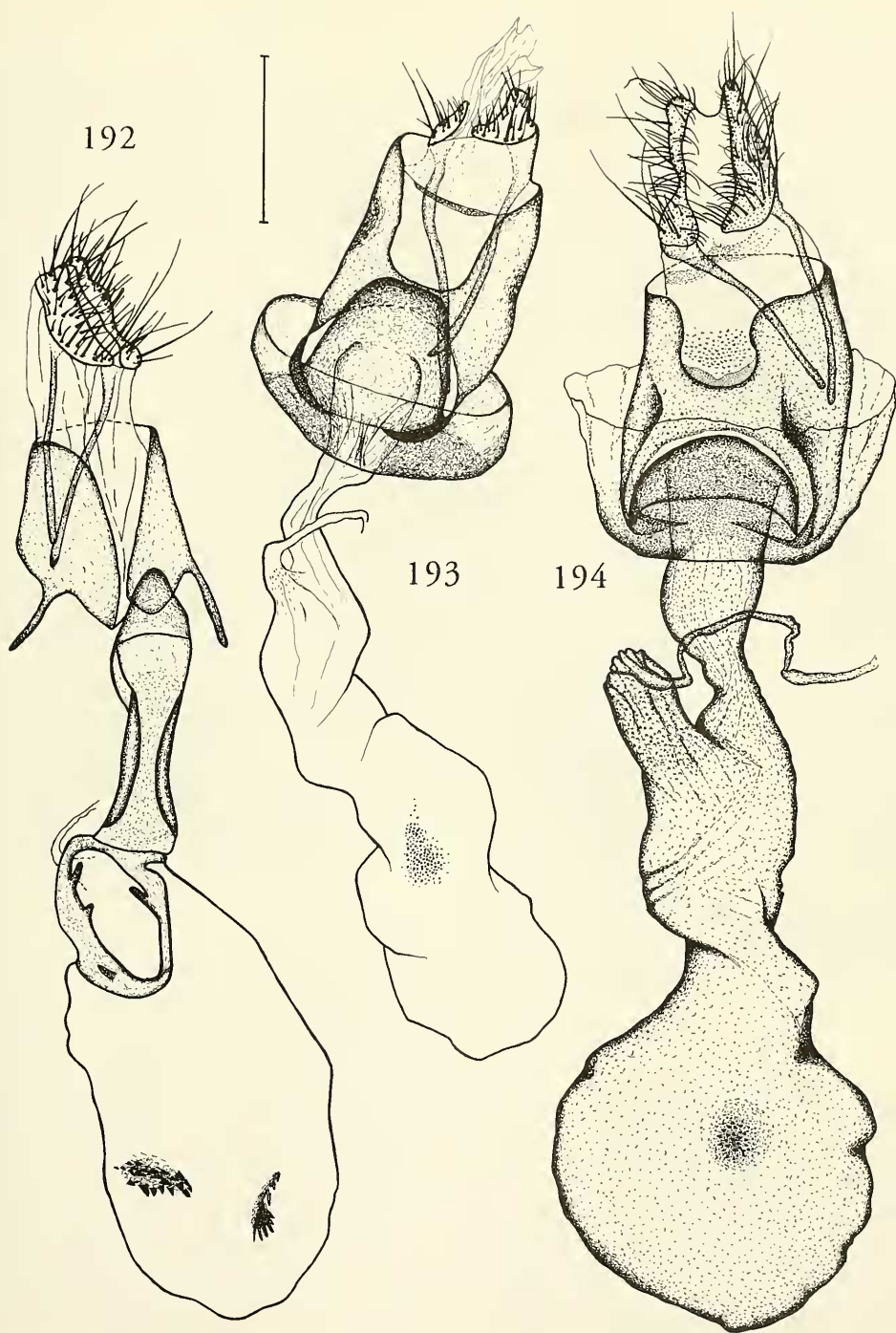
Figs. 183-185. Female genitalia; ventral aspect. — 183, *Euchromius jaxartellus*, 184, *Euchromius zagulajevi*, 185, *Euchromius ramburiellus*. Scale 0.5 mm.



Figs. 186-188. Female genitalia; ventral aspect. — 186, *Euchromius donum*; 187, *Euchromius sudanellus*; 188, *Euchromius subcambridgei*. Scale bar 0.5 mm.

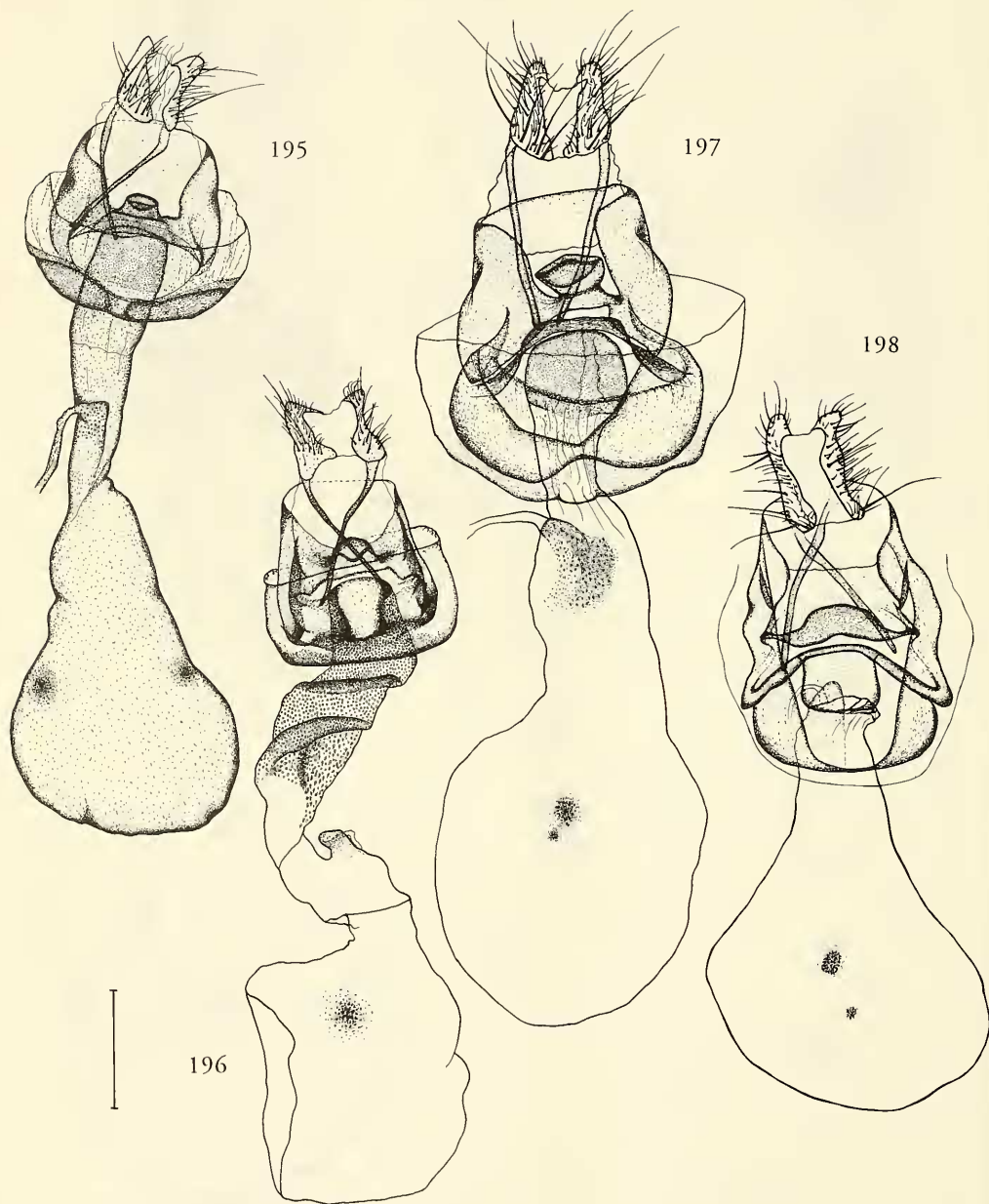


Figs. 189-191. Female genitalia; ventral aspect. – 189, *Euchromius cambridgei*; 190, *Euchromius viettei*; 191, *Euchromius hampsoni*. Scale bar 0.5 mm.



Figs. 192-194. Female genitalia; ventral aspect. — 192, *Euphranta klimeschi*; 193, *Euphranta discopsis*; 194, *Euphranta labelum*. Scale bar 0.5 mm.





Figs. 195-198. Female genitalia; ventral aspect. – 195, *Euchromius aris*; 196, *Euchromius erum*; 197, *Euchromius locustus*; 198, *Euchromius nigrobasalis*. Scale bar 0.5 mm.